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A MANAGEMENT SURVEY OF THE SANDY HILL IRON AND BRASS WORKS

VOLUME ONE

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A MANAGEMENT SURVEY

by

The NAVAL OFFICERS in the MANAGEMENT ENGINEERING PROGRAM

A Group Thesis Submitted to the Faculty
of the Department of Management Engineering
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

8854

Major Subject: The SANDY HILL IRON and BRASS WORKS
HUDSON FALLS, NEW YORK

Rensselaer Polytechnic Institute
Troy, New York

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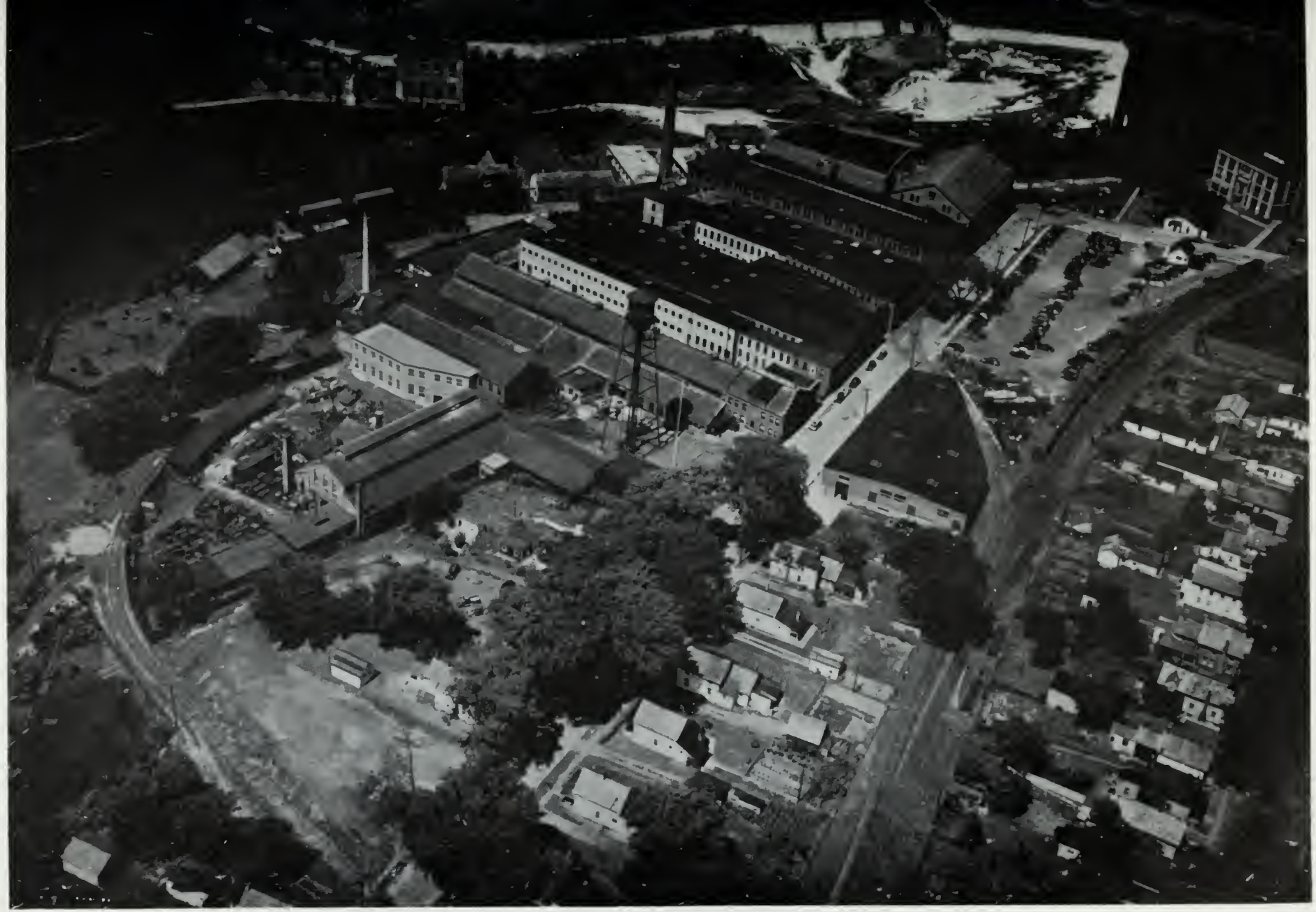


AERIAL VIEW OF THE HOME OF THE SANDY HILL IRON AND BRASS WORKS,
HUDSON FALLS, NEW YORK.

FOREWORD

Purpose

The Management Survey of the Sandy Hill Iron and Brass Works, Hudson Falls, New York, was arranged by the Department of Management Engineering, Rensselaer Polytechnic Institute, Troy, New York, to provide the study group, comprising fourteen Naval and Marine Corps officers, with the opportunity to observe and to apply the theoretical and practical concepts of management principles to a successful industrial organization.

The study has therefore been oriented toward the objective of reducing the findings to statements of fact which have their origin in the tenets of modern management principles, modified as required because of company size and other conditions.

Scope

For study purposes, the Sandy Hill Iron and Brass Works was divided into six major functional areas which correspond to the present organizational structure of the company. These areas have been made the subject of the major chapters of the survey.

The study was conducted during a period of approximately sixteen weeks with plant visits, data collection and consultation generally limited to one day per week. Although the total time allotted for the study was limited, the proximity of the plant to the Troy area made possible additional visits which permitted the group to gather sufficient data in the time available.

The report is arranged so that it proceeds from a description of conditions as they exist in the present organization to the recommendations considered by the group to be worthy of integration. In formulating the recommendations, the study group deemphasized personnel and personality considerations because of the belief that the function under discussion is paramount. Naturally however, in a study such

as this it has not always been possible to accomplish this goal. Therefore the reader must recognize this fact when studying the recommendations.

The proposed recommended changes are not, for obvious reasons, related to a time base nor is a time schedule for implementation suggested. Finally, the group considers that the recommendations complement that "family" spirit and attitude which permeates all levels of the organization and which the group considers to be the foundation upon which the organization stands.

ACKNOWLEDGEMENT

This thesis, being a group effort of fourteen naval officers, contains the opinion and views of individuals whose managerial experience has been confined to activities within the Naval Establishment. In the field of modern business management the experience of the group has been limited to that information which has been presented as part of the Management Engineering Curriculum, Rensselaer Polytechnic Institute, Troy, New York. To accomplish the objective of this survey in the limited time available has required the cooperation and painstaking guidance of not only the faculty of the Management Engineering Department, Rensselaer Polytechnic Institute, but also of the officers and employees of the Sandy Hill Iron and Brass Works, Hudson Falls, New York.

The major portion of the information presented herein was obtained through interviews with personnel of the Sandy Hill Iron and Brass Works, questionnaires and on-the-site observations of the company's activities.

It is the desire of the group to express their earnest and grateful thanks to Mr. J. Walter Juckett, President and General Manager of the Sandy Hill Iron and Brass Works for his generous cooperation and especially for making available the opportunity to conduct the survey. Acknowledgement with appreciation is also extended to the following executives of the Sandy Hill Iron and Brass Works for their assistance and advice: Mr. J. Wesley Joslyn, First Vice President; Mr. Loren G. Gallup, Vice President, Sales and Manufacturing; Mr. Arthur J. Parent, Vice President and Comptroller; Mr. L. G. Brockelsby, Secretary-Treasurer; Mr. Nils Klykken, Vice President, Pulp Machinery; and Mr. Allen A. Lowe, Assistant Vice President. To the many employees of the Sandy Hill Iron and Brass Works who offered comment and information freely in the spirit of the "family" atmosphere which characterizes so well the underlying nature of the organization, the group humbly express their thanks and appreciation.

In addition acknowledgement with thanks is made to Professor W. Franklin Spafford, Head, Department of Management

Engineering, Rensselaer Polytechnic Institute and to the members of the Management Engineering faculty, for their untiring counseling in the principles of modern management techniques and practices, without which this study would not have been possible.

Finally, grateful acknowledgement is made to Mrs. Leo Hayes for the very competent manner in which she has prepared the manuscript of this thesis.

HISTORY

The Sandy Hill Iron and Brass Works of Hudson Falls, New York, designer of fiber production and sheet forming machinery, is celebrating the commencement of its second century of progress as a pioneer in America's paper making industry.

From the early beginnings as a local company, supplying principally the paper mills of the New England area, the Sandy Hill Iron and Brass Works today is international in scope in that Sandy Hill machinery is in operation in almost every state of the Union as well as in Mexico, Brazil, Peru, Argentina, India, China, Sweden, France, Belgium, Italy, Union of South Africa, Portugal, Austria, Canada, Cuba, Uruguay and Korea.

In 1768, Albert Baker of New York, built a dam and water powered saw mill at the foot of a sandy hill beside the Hudson River's highest waterfall. These falls, since known as Baker Falls, attracted other projects and in 1844, the first manila paper mill in the United States was built there. In 1858, the Baker's Falls Iron Machinery Works, predecessor of the Sandy Hill Iron and Brass Works, was established by Philip Wait, an inventor of considerable prominence, and the plant became the leading producer of water turbines which at that time were utilized to harness the hydro-power potential of the Hudson River. With the passage of time, more and more paper mills were built in the immediate area until the upper Hudson Valley was the location of the bulk of the pulp and paper making industry in the United States.

The size and importance of the huge and growing paper industry at the very doorstep of the Baker's Falls Iron Machinery Works led quite logically to repair and replacement work in these mills and to the development of special machinery for them. It was not long before the firm was designing and manufacturing complete paper making machines. In 1874, the management of the company changed. At this time the name of the company was changed to Sandy Hill Iron and Brass Works. During this period of the company's growth new and improved buildings and equipment were added to keep pace with the steady evolution of the paper making industry.

In 1897, the business was incorporated and the prefix "The" was added to its name. In 1906, Will Packer, son

of N. E. Packer who in 1874 became a partner of the company, perfected the Packer Open Side Screen which revolutionized traditional methods of dirt removal and fiber grading. The Packer screen won such wide acceptance that it soon became synonymous with "flat screen".

In 1934, an alliance was formed between the Sandy Hill Iron and Brass Works and the A/B Kamyr organization of Sweden, in which the Sandy Hill Iron and Brass Works became the exclusive United States agent for the Kamyr continuous bleaching equipment, wet machines and a variety of Kamyr accessories used in the pulp and paper making industry. A/B Kamyr is a sales and development organization composed of the three leading Scandinavian manufacturers of pulp and paper making machinery.

In 1936, a new management, headed by the father of the present president, came to the Sandy Hill Iron and Brass Works. In 1949, a working agreement was reached between the Sandy Hill Iron and Brass Works and Canadian Vickers of Montreal which provided that all Sandy Hill equipment sold in Canada would be built by Canadian Vickers.

During World War II, the Sandy Hill Iron and Brass Works undertook the production of towing winches, minesweeping equipment, gun mounts, LST stern anchor handling gear and other significant items for the armed forces. During the war period the shop facilities were never closed and the population of the organization reached its maximum number of approximately seven hundred and fifty employees. For their outstanding record in the war effort the Sandy Hill Iron and Brass Works was awarded the coveted Navy "E".

In 1948, the Sandy Hill Iron and Brass Works entered into an agreement with the Newport News Shipbuilding and Drydock Company of Newport News, Virginia, which provided that the latter would cast and machine components beyond the capabilities of Sandy Hill's foundry and shop facilities. In addition, the Sandy Hill Iron and Brass Works is associated with Bertrams Limited of Edinburgh, Scotland, developers and makers of pulp and paper making machinery.

Entering its second century of operations as one of the nation's leaders in the design and manufacture of pulp and

paper making machinery, the Sandy Hill Iron and Brass Works produces the highest quality machines capable of making all types of pulp and paper products. Its major products include:

Fourdrinier machines.

Yankee machines.

Pulp producing equipment including the Kamyr line.

Board machines: multi-ply, wallboard and hardboard.

Rotoformers.

Pulp and Paper specialties, including screens, calenders, reels, power drives, felt conditioners, flow control units, shakes, oil film bearings, stock pumps, grinders, gate valves, suction presses, breaker stacks, size presses, etc.

SUMMARY OF MAJOR RECOMMENDATIONS

It is considered that there are many advantages in bringing together the major recommendations in one location. It is hoped that this procedure will not lead the reader to believe that the detailed list of recommendations contained at the end of all chapters is less important. Discussion of the following recommendations may be found in the principal chapters of the report.

1. Separate the sales and manufacturing functions into two line departments, each under the administration of an officer at the top management level.

2. Combine the functions of Secretary-Treasurer and Comptroller.

3. Reassign responsibility for the Purchasing function to the Manufacturing Department.

4. Establish an Industrial Relations Department with the Manager of Industrial Relations reporting direct to the President.

5. Assign responsibility for all sales activities, domestic and foreign, to the Vice-President of Sales.

6. Establish a Production Planning Section reporting to the Vice-President of Manufacturing, responsible for the following:

   a. Production planning and estimating.
   b. Production scheduling of all work including day work.
   c. Inventory control of minimum-maximum levels and issue priorities.
   d. Traffic control.
   e. Maintenance planning.

7. Delegate to the Works Manager full line authority over all production shops and personnel including the foundry and plant maintenance.

8. Elevate and strengthen the status of the Methods and Quality Control functions by making them staff activities reporting to the Vice-President of Manufacturing.

9. Reassign the Order and Estimating Sections to the Sales Department.

10. Establish a planned, formal and continuing Research and Development program.

11. Separate research and development engineering from general engineering by assigning a number of development engineers to the Chief Development Engineer.

12. Assign responsibility for all project and field engineers to the Chief Engineer.

13. Assign responsibility for all general engineering activities, paper and pulp, whether foreign or domestic to the Chief Engineer.

14. Prepare and adopt a company-wide classification system which is applicable to all manufacturing materials and activities.

15. Establish an aggressive program of simplification and standardization.

16. Prepare and institute a standard processing procedure for all orders accepted by the company.

17. Develop a procedure whereby supervisors are required to review and approve all time slips to ensure that direct labor charges are correct and to identify instances where an abnormal amount of time has been expended on a given job so that corrective action may be initiated. This requires that supervisors be provided with realistic standards of performance.

18. Prepare, promulgate and maintain job descriptions for "blue" and "white" collar workers as well as position descriptions for all management personnel.

19. Prepare and institute a formal Merit Rating system which is applicable for all personnel.

20. Prepare and institute a formal Executive development program.

21. Establish a formal Management Advisory Committee composed of company officers.

CHAPTER I - ORGANIZATION

1.1 General Discussion. The Sandy Hill Iron and Brass Works keeps no formal organization charts. Top management is of the opinion that such charts have a serious drawback in that they tend to make management personnel too "rank conscious". An individual's resentment concerning his assigned position in the organizational hierarchy could thus have an adverse effect on the quality of his work and on his relationships with others in the organization. In a small company, personal jealousies and animosities can be especially disruptive.

The Sandy Hill philosophy of management emphasizes group or "family" spirit among all people in the company from the lowest paid worker up to the President. The influence of this philosophy on the organization structure is evidenced in many ways, but most notably in the large number of informal working relationships. Lines of authority between the various management positions are loosely drawn, and there is a considerable overlapping of duties and areas of responsibility. In the area of sales, for example, each officer is encouraged and expected to be a salesman for the company as often as time and opportunity permit.

An extraordinary degree of communication between top management and the lower organization levels is found, best exemplified by the President's "open door" policy permitting anyone at any time to bring matters of grievance to his direct attention, without recourse to the "chain of command". Indeed, as will be shown later in the sections on Manufacturing and Engineering, the "chain of command" concept is given little more than lip service at Sandy Hill. The Sandy Hiller works primarily for the company rather than for an immediate superior in the organization.

The degree of financial success achieved to date and the harmonious relations existing between labor and management make criticism of the company's present policy of maintaining a loose and informal organization structure difficult. However, in the analysis to follow, the structure is appraised in the light of tested organizational principles with the suggestion that even greater efficiency of operations and finan-

cial benefits may be derived from the application of these principles.

As a first step in making the analysis, it was necessary to prepare charts indicating what we thought to be the present "formal" relationships between the various positions in the organization. This picture was assembled from a consideration of position titles, interviews with the personnel occupying the positions, and from questionnaires. As might have been expected, the interviews and questionnaires revealed that some personnel were uncertain or reluctant to state what they felt to be their "line" positions. In such cases, we undertook to make the assignment ourselves, basing our decisions upon data accumulated from persons in other related positions as well as from the one in question.

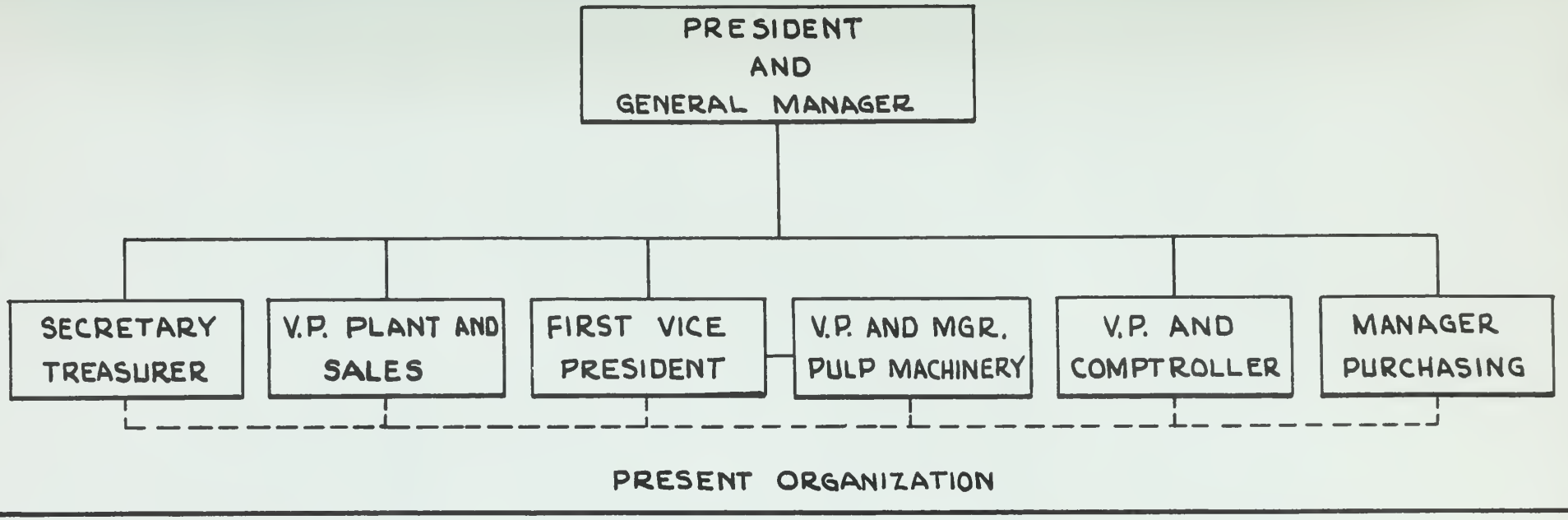
Position titles were not always the best indication of the relative status of positions in the organization. There is some tendency at Sandy Hill to confer honorary titles in recognition of meritorious or special service. Two individuals are designated as "Assistant Plant Manager", for example, but neither functions in such capacity as it is usually understood.

In this chapter we attempt to describe the present organizational structure of Sandy Hill, department by department, and where appropriate, recommend changes we consider to represent better organization practice. All such changes can be made with the existing executive force, since no new talents or personnel increases are required. Emphasis is placed, rather, on (a) a division of work which centralizes similar or closely-related activities into single departments and (b) the establishment (or clarification, as appropriate) of definite lines of authority and responsibility within departments.

1.2 Top Management.

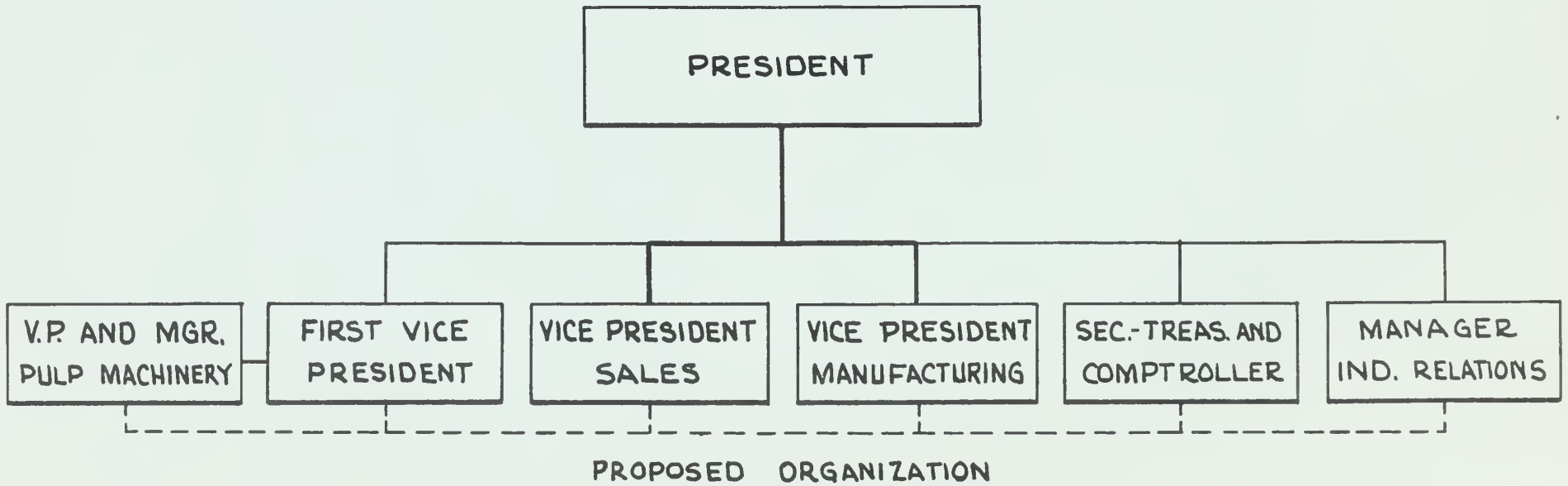
1.21 Present Organization. (Figure 1-1) The Sandy Hill top level management consists of an eight-member Board of Directors, four of whom are officers in the company; a President and General Manager; a First Vice-President; a Vice-President in Charge of Sales and Plant; a Comptroller; a Secretary-Treasurer; a Vice-President and Manager Pulp Machinery Division; and a Man-

FIGURE 1-1



PRESENT ORGANIZATION

FIGURE 1-2



PROPOSED ORGANIZATION

ager of Purchasing. All of these positions, with the exception of the Vice-President and Manager Pulp Machinery Division, report direct to the President. The Pulp Machinery Vice-President reports to the First Vice-President and serves primarily as an expert and consultant in the design, preparation of specifications, production, and installation of this specialized type of machinery. A considerable portion of his time is also spent in sales activities.

1.211 President and General Manager. The President and General Manager has the usual responsibilities for planning, development, and approval of specific programs to implement the general policies established by the Board of Directors and for the execution of such policies. The position of General Manager was only recently separated from that of President. When the former General Manager was promoted to fill the vacancy created by the passing of the President, the Board of Directors desired that he retain the duties and responsibilities of General Manager as well.

The President is a member of the Board.

1.212 First Vice-President. The First Vice-President assumes the duties and responsibilities of the President in the latter's absence. He also serves as Vice-President in Charge of Engineering and as such is responsible for the direction and coordination of all engineering activities with the company. The First Vice-President is also Assistant Treasurer and a member of the Board of Directors.

1.213 Vice-President in Charge of Sales and Plant. The company's sales and manufacturing activities are combined under a single Vice-President. The merger of these two functions was a matter of expediency occurring at the time the present incumbent, formerly the Plant Manager, assumed responsibility for sales while at the same time retaining his former responsibilities for manufacturing operations.

The Vice-President in Charge of Sales and Plant is a member of the Board.

1.214 Secretary-Treasurer. The duties of Secretary-Treasurer were formerly handled by the General Manager. When the General Manager became President, the Secretary-Treasurer position was made a separate function at the Vice-President level. In a company the size of Sandy Hill, however, the duties and responsibilities of the Secretary-Treasurer are few. They consist, in the main, of signing the company's checks, keeping the minutes of Board meetings, and in conjunction with the President and First Vice-President, signing the company's contracts. Consequently, the Secretary-Treasurer is assigned other duties and responsibilities which consume the major portion of his time. He is the Assistant Sales Manager and also has chief responsibility for foreign sales.

1.215 Comptroller. The Comptroller's duties are of a standard nature. He is responsible for the formulation of accounting and costing policies, preparation of financial statements and reports, budgeting, general cost accounting, inventory control, and the preparation of financial forecasts and analyses as appropriate.

1.216 Manager of Purchasing. The Purchasing function, by reason of the large amount of purchased materials required for the company's operations, is accorded departmental status. The Manager of Purchasing is responsible for the purchase of raw materials, supplies, and special components; liaison with the Engineering and Manufacturing departments with regard to availability of materials for procurement and material standards; maintenance of material catalogs; maintenance of material price information; annual inventory of purchased items; sales of scrap and surplus items; and supervision of the #1 Stockroom and Receiving Department.

1.217 Legal. Legal assistance, as required, is obtained through the services of a lawyer permanently retained to represent the corporation.

1.22 Proposed Organization. (Figure 1-2) (a) We recommend the immediate separation of the sales and manufacturing functions into two line departments, each administered by an ex-

ecutive on the Vice-President level. The efficient management and operation of each of these functions is vital to the success of any profit-making enterprise. A single executive is incapable of devoting to them the full, exclusive attention which each demands.

(b) We recommend that the executive positions of Secretary-Treasurer and Comptroller be combined. As stated previously, the duties of Secretary-Treasurer are few and would not constitute too large an additional burden for the Comptroller. A review of the organization structures of several small and medium-sized companies shows this combination of duties to be common practice.

It is understood that the company's independent auditors favor the separation of these functions for reasons of security and control over the expenditure of company funds. We are of the opinion that an adequate system of internal checks can be devised to serve the same purpose.

(c) We recommend that the Purchasing Department be integrated with the Manufacturing Department, with the Manager of Purchasing reporting direct to the Vice-President of Manufacturing. The primary role of the purchasing function in a manufacturing organization is to support production. Manufacturing depends greatly upon Purchasing for assistance in matters of inventory and inventory control, production cost estimating and cost control, availability of materials of the kind required and at the time required, and scrap disposal. The Purchasing Department should be made aware of its basic mission by becoming identified with the Manufacturing Department administratively.

(d) We recommend the establishment of an Industrial Relations Department, administered by an executive on the managerial level who will report direct to the President. The Manager of Industrial Relations will be responsible for such activities as:

Maintenance of personnel records
Recruitment, selection, and placement of personnel
Plant protection
Medical facilities
Preparation and maintenance of employee job descriptions

Preparation and operation of a system of merit ratings for employees
Training
Safety procedures, inspections, and education
Public and community relations
Intra-company communications and social activities

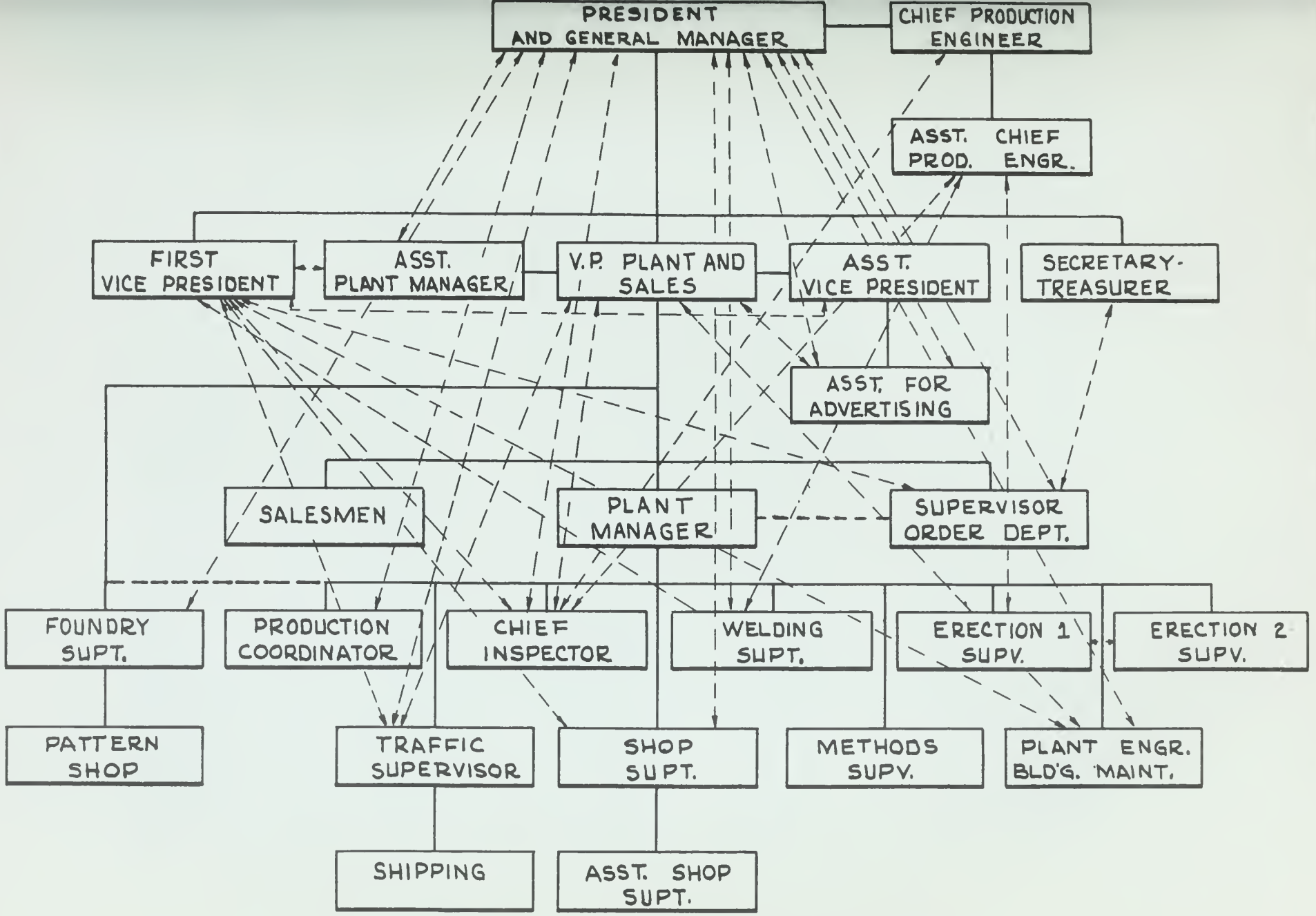
Currently these functions are carried out with more or less effectiveness by various personnel throughout the organization. The objective of this recommendation is to centralize the activities listed, and by assigning responsibility for their execution, ensure that each continues to receive appropriate emphasis.

(e) We recommend that in conjunction with the separation of the sales and manufacturing functions, all sales activities become the sole responsibility of the Vice-President of Sales. Except for the fact that it has been traditional within the company, we can find no important reason for the present division of responsibility which places foreign sales and pulp machinery equipment sales outside the province of the Sales Department. It should be pointed out that centralization of sales responsibilities need not affect the company's "every man a salesman" philosophy. It will require only that Sales Department personnel assume responsibility for follow-up on prospective sales initiated by others outside the department.

(f) We recommend that the title "General Manager" be dropped and the duties of that position, presently not described by a Position Description, be added to those of the President. We believe that the size of the Sandy Hill corporation does not warrant an additional level of management between the President and the senior executives, nor is the proposed span of control of the President excessive.

1.3 Plant and Sales Department.

1.31 Present Organization (Figure 1-3) The Plant and Sales Department is headed by a Vice-President reporting directly to the President and also to the First Vice-President on sales and engineering matters. The department is responsible for



PRESENT ORGANIZATION SALES - MANUFACTURING

FIGURE 1-3

general sales activity (excepting foreign and pulp equipment sales); sales promotion and advertising; manufacturing and related activities such as quality control, methods engineering, production scheduling and coordination, foundry operations, plant maintenance, equipment maintenance, erection, traffic, and shipping. In addition to the present 'formal' organization, Figure 1-3 indicates the informal channels of communication found to exist within the department at the time of the study.

1.311 Managerial Level.

Plant Manager - responsible to the Vice-President of Plant and Sales for the conduct of all production operations, including packaging and warehousing, with the exception of foundry work. He is formally responsible for the control of foundry scheduling, however.

Order Department Supervisor and Office Manager - responsible for the preparation of job orders, acknowledgment of customer orders, customer relations, hiring of office employees, maintenance of office equipment, and supervision of internal mail distribution. In effect, he schedules foundry work for the Plant Manager. He has collateral duties as Assistant Secretary-Treasurer.

1.312 Supervisory Level.

Foundry Supervisor - responsible to the Vice-President of Plant and Sales for efficient operation of the foundry and pattern shop. He is responsible to the Plant Manager for meeting foundry work schedules.

Production Coordinator - responsible to the Plant Manager for production scheduling and the expediting of job orders through the shop.

Shop Superintendent - responsible to the Plant Manager for all machine and carpenter shop operations, including material handling within the shop. In the present organization he has authority to modify production schedules as he considers necessary in order to process unexpected or emergency 'day work' orders.

Chief Inspector - responsible to the Plant Manager for in-process quality control, finished goods inspection, incoming inspection, layout inspection of castings, and the maintenance of inspection records.

Methods Supervisor - responsible to the Plant Manager for the preparation of work time standards, manufacturing procedures, special tool design, maintenance of actual labor and machine hour records, and the design of jigs and fixtures.

Welding Supervisor - Responsible to the Plant Manager for all welding operations, electrical and piping maintenance, operation and maintenance of the boiler plant, overhead crane operation and maintenance, and the supervision of night watchmen.

Assistant to the Plant Manager for Plant Engineering - responsible to the Plant Manager for building and grounds maintenance (with the exception of plumbing and electrical installations). He is also responsible for operation and maintenance of the side bay crane and for material handling between buildings.

Erection Supervisors (2) - responsible to the Plant Manager for final assembly of paper-making and pulp processing equipment, packaging, and preparation for shipment. At times they are required to erect equipment in the field.

Traffic Supervisor - responsible to the Plant Manager for scheduling and routing of shipments for the company, negotiation of transportation rates, auditing of freight bills, preparation of claims for loss or damage, tracing of overdue shipments, and obtaining customs clearances on import and export shipments.

1.313 Special Assistants.

Assistant Vice-President - responsible to the Vice-President of Plant and Sales for the preparation of advertising material and sales bulletins. By reason of his long experience in the business, he also acts as a consultant for the Engineering Department and frequently accompanies salesmen on sales trips in an advisory capacity. He has one as-

sistant charged with the preparation of company publicity, maintenance of public relations, and publication of a company activity newspaper.

Chief Production Engineer and Assistant Plant Manager - responsible to the President for the execution of specially assigned projects. At the time of the study he was assigned responsibility for planning the company's projected plant expansion program. He was formerly the Supervisor of Methods and still acts as an adviser for this section.

Assistant Plant Manager - responsible to the Vice-President of Plant and Sales for the execution of special projects. At the time of the study he was assigned responsibility for planning the foundry expansion program.

1.314 The "Informal" Organization. Figure 1-3 illustrates, in addition to the formal structure, the informal channels of communication between the various management personnel in the Plant and Sales Department. A detailed discussion of the informal organization and its effects on the company as a whole is made in Section 1.9.

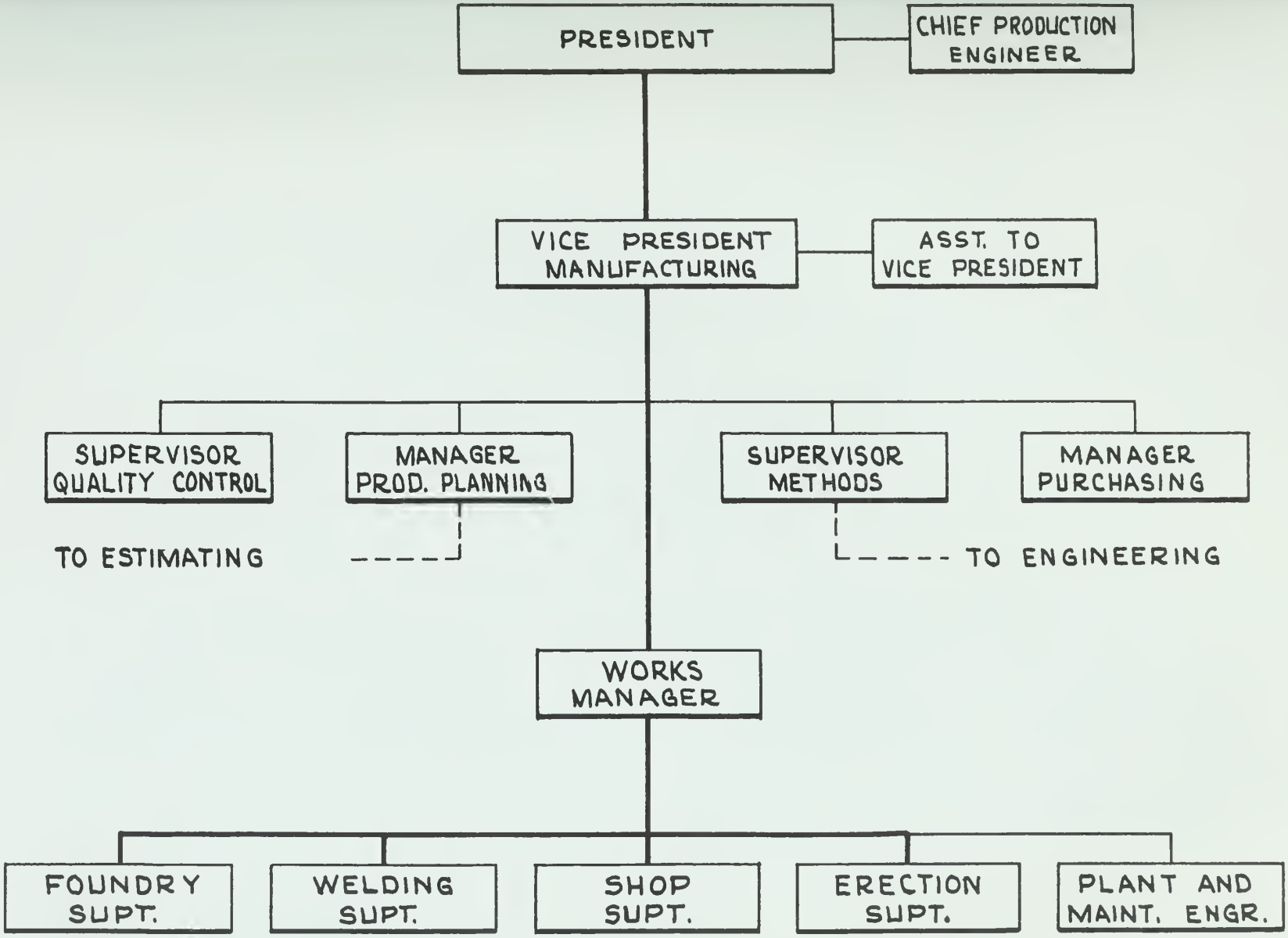
1.32 The Proposed Organization (Figures 1-4 and 1 5)

(a) We recommend the immediate separation of the sales and manufacturing functions into two line departments, each under the administration of an officer on the Vice-President level.

Under the New Manufacturing Department: (Figure 1-4)

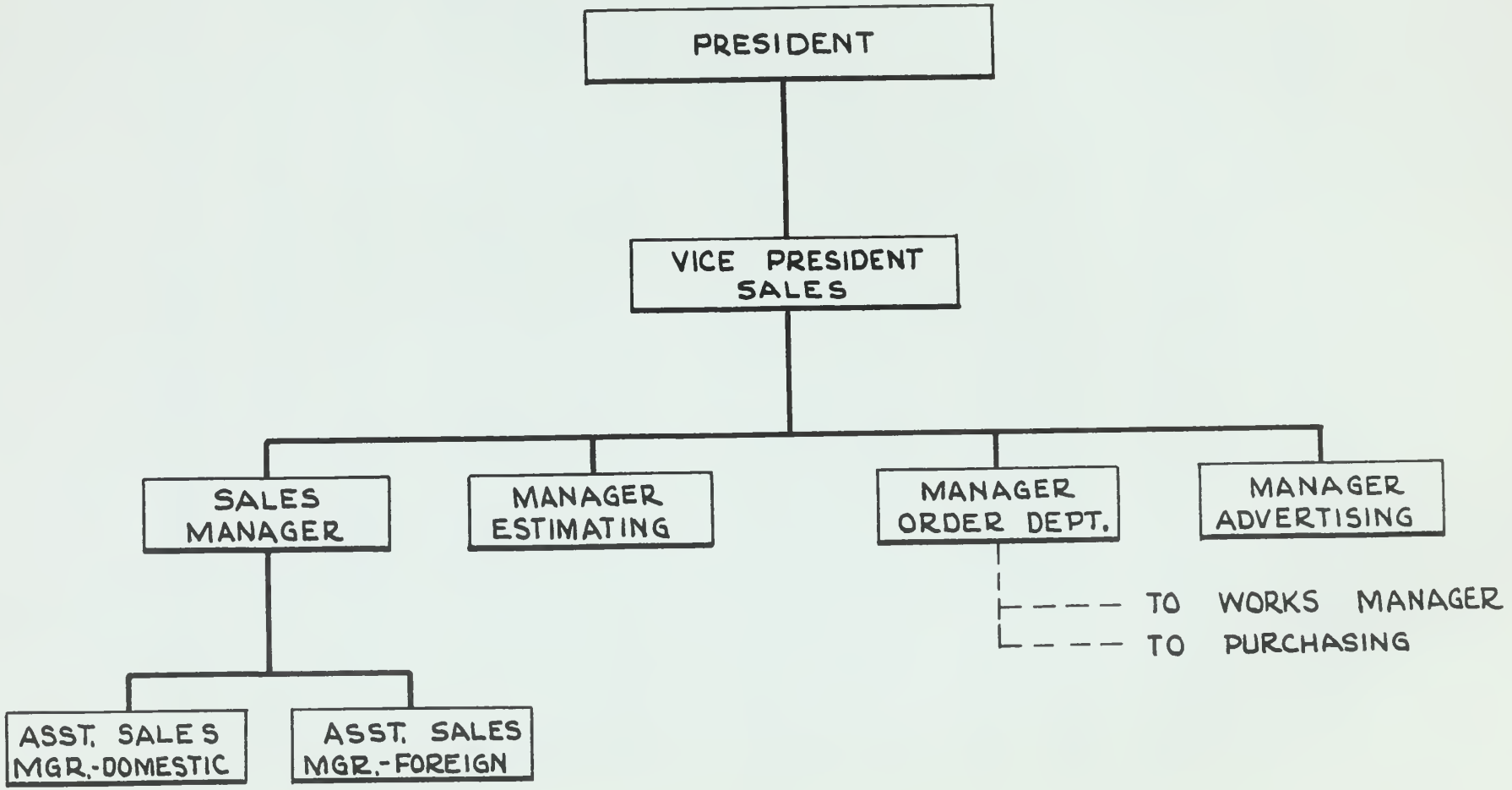
(a) We recommend the establishment of a Production Planning Section, administered by an executive on the managerial level reporting direct to the Vice-President of Manufacturing in a staff capacity. The Production Planning Section will be responsible for the following activities:

1. Production planning, estimating, and control.
2. Production scheduling of all work, including day work.



PROPOSED ORGANIZATION MANUFACTURING

FIGURE 1-4



PROPOSED ORGANIZATION SALES

FIGURE 1-5

3. Establishment of maximum and minimum inventory levels.
4. Traffic control.

This recommended change centralizes related functions which at the present time are conducted (with little or no coordination in some instances) at widely separated points throughout the organization.

(b) We recommend that a clear distinction be made between line and staff activities within the department, and that the conventional line and staff relationships be observed; i.e., the staff supports, assists, and provides advice to the line, which in turn is responsible for execution of the company's basic objectives.

(c) We recommend that the immediate subordinate in the line to the Vice President be designated "Works Manager". The Works Manager will be responsible for the efficient operation of all production facilities. Assisting him and immediately subordinate to him in the line will be the Foundry Superintendent, Weld Shop Superintendent, Plant Superintendent, the Erection Supervisors, and the Supervisor of Plant Engineering and Plant Maintenance.

(d) We recommend that the following poisitions be established as a specialized staff reporting direct to the Vice-President of Manufacturing: Manager of Production Planning, Manager of Purchasing, Methods Supervisor, and Supervisor of Quality Control. We believe that the company will benefit greatly by elevating the Methods and Quality Control departments to a level in the organization more commensurate with the importance of their contributions to the company's success.

(e) We recommend that the following position titles be modified to better describe the function of the position:

(i) Change "Chief Production Engineer and Assistant Plant Manager" to "Chief Production Engineer".

(ii) Change "Assistant Plant Manager" to "Assistant to the Vice-President of Manufacturing".

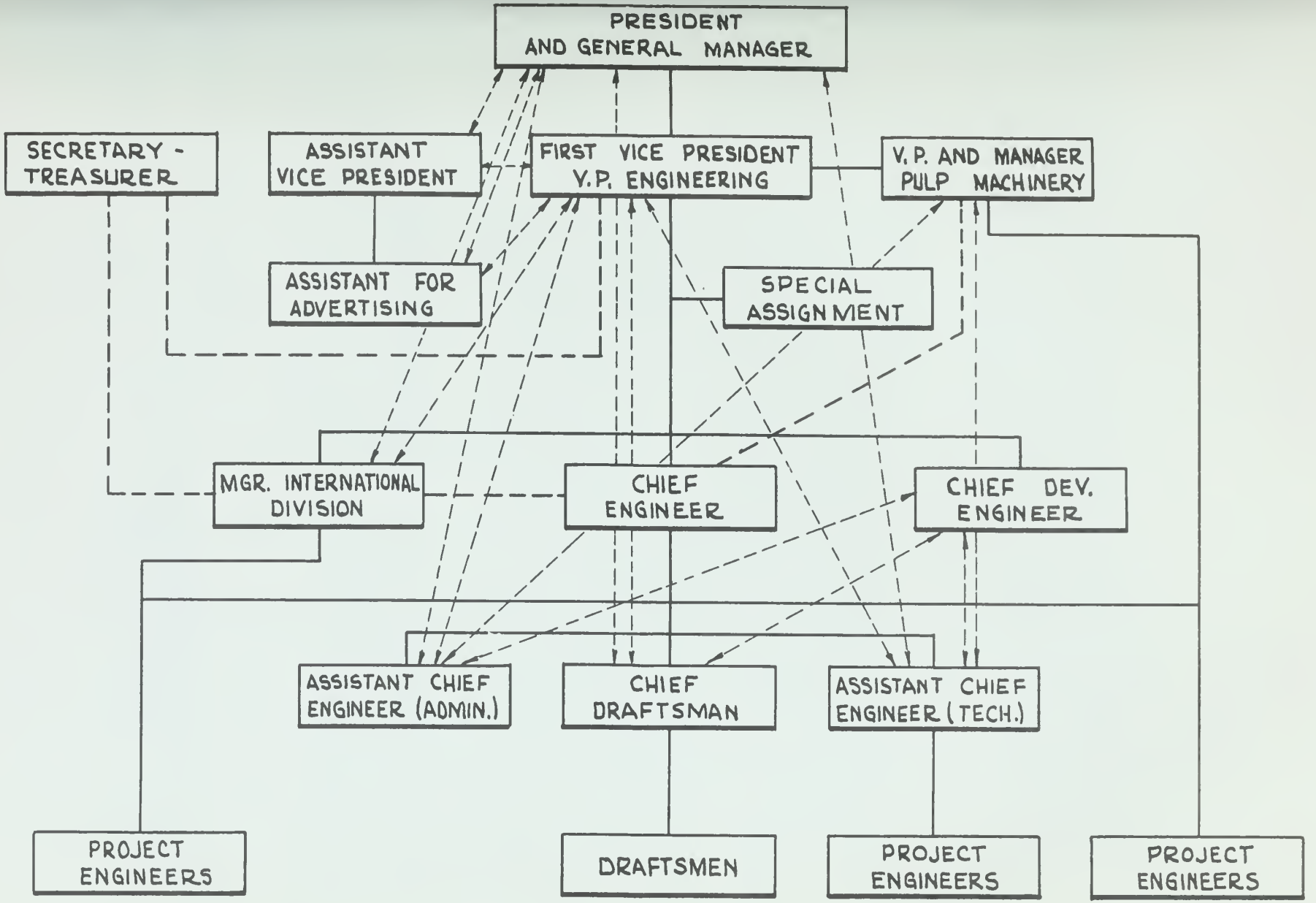
Under the New Sales Department: (Figure 1-5)

(a) We recommend that the following be established as separate line activities under the direction of the Vice-President of Sales: Sales Section, Order Section, Estimating Section, and Advertising Section. The Sales Manager will be assisted in his duties by a Supervisor of Foreign Sales and a Supervisor of Domestic Sales. The Order Section will retain its present responsibilities for acknowledgment of customer orders, conversion of customer orders to company job orders, and customer relations. The Estimating Section will prepare cost estimates for each job, based on data provided by the Manufacturing and Engineering Departments. The Advertising Section will assume the duties and responsibilities for advertising presently assigned to the Assistant Vice-President and his assistant.

1.4 Engineering Department.

1.41 Present Organization. (Figure 1-6) The Engineering Department is headed by the First Vice-President and Vice-President of Engineering reporting directly to the President. The First Vice-President is the corporation's principal executive on matters pertaining to Engineering and Research and Development. The department is responsible for general engineering matters connected with pulp and paper making machinery, the erection of foreign paper making plants and research and development projects of new equipment and devices. The latter function, although carried on more or less continuously over the years, has only recently been crystalized into a company-wide program. The First Vice-President is involved to some extent in directing and/or consulting on such matters as sales, advertising, manufacturing, estimating, contracts, costs and patents. In the President's absence, the First Vice-President acts for the President. Figure 1-6 shows the present formal organization as developed from the organizational questionnaire and interviews with personnel in the department. Superimposed on that is the informal organization shown by the light dashed lines.

The Vice-President and Manager Pulp Machinery, on the top executive level, acts in the capacity of advisor and



PRESENT ORGANIZATION ENGINEERING

FIGURE 1-6

consultant to the First Vice-President on matters relating to the sale, estimating, installation, and development of the Kamyr line of pulp machinery, and provides liaison with the A/B Kamyr organization of Sweden with which the Sandy Hill Iron and Brass Works is affiliated. He is responsible for the supervision of project engineers to conduct the detailed projects on the Kamyr line.

1.411 Managerial Level.

Manager, International Engineering Division - reports to the First Vice-President and is responsible for the erection and start-up of foreign plants and for the supervision of project engineers in conjunction with the Chief Engineer. Additionally, he is involved in sales and engineering primarily in the overseas area as a result of foreign field trips and surveys which he conducts.

Chief Engineer - although reporting direct to the First Vice-President, also coordinates with the Vice President, Pulp Machinery, on matters relating to the Kamyr line. He is responsible for scheduling general engineering work and only that part of the research and development program which involves coordination and progress reporting, the First Vice-President being responsible for establishing the priority for the conduct of research and development projects. In a general manner he is involved in providing customer contact and service.

Chief Development Engineer - reports to the First Vice-President and is responsible for improvements to active designs, design of special devices (general) and for the review of new designs. Performs additional duties of consultant to customers with paper making problems, salesman and starting up of new machines.

1.412 Supervisory Level.

Assistant Chief Engineer (Administrative) - reports to the Chief Engineer and is responsible for scheduling and assigning of jobs to project engineers as well as for the supervision of the general administrative routine in the of-

fice of the Chief Engineer. In a general manner he is involved in providing customer contact and service.

Assistant Chief Engineer (Technical) - reports to the Chief Engineer and is responsible for the supervision of project engineers who perform the detailed engineering projects.

Chief Draftsman - reports to the Chief Engineer and is responsible for preparation of engineering specifications, standards, assembly and detail working drawings as well as the Blueprint Room and blueprint files. In addition he is responsible for original design computations for strength and function. In a general manner he is involved with providing customer contact and service.

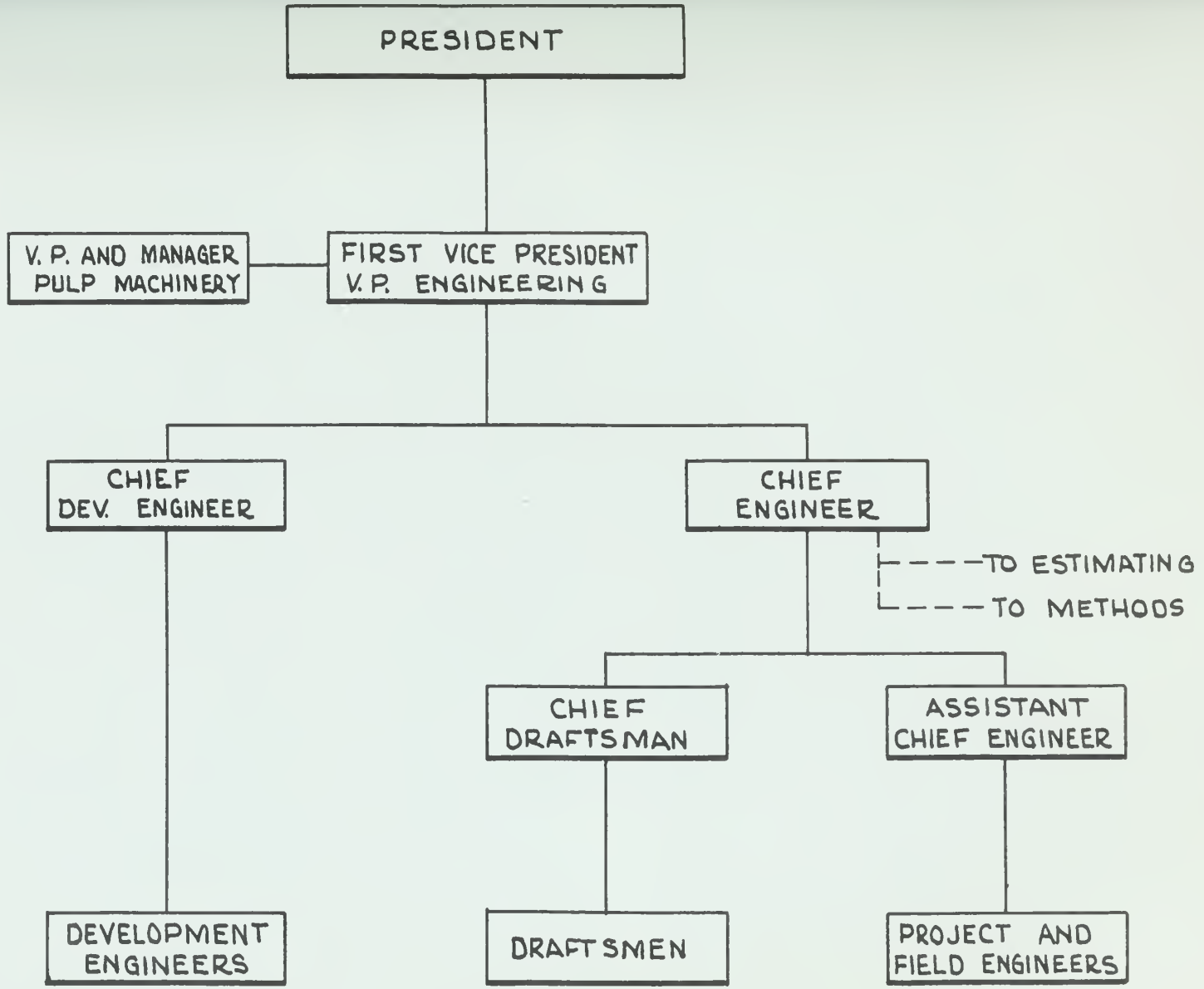
1.413 Special Assistants.

Assistant to the First Vice-President for Special Assignment - reports to the First Vice-President in connection with assignments which involve engineering matters and customer contact and service. In addition he is responsible to the President for special projects connected with the plant expansion and improvement program.

1.42 Proposed Organization (Figure 1-7) We recommend that:

a. On the top executive level under the Vice-President, Pulp Machinery, that the project engineers shown in Figure 1-6 be reassigned to the Chief Engineer. This change permits the Chief Engineer to supervise all engineering projects concerning pulp and paper making equipment. In effect it does away with the distinction between Kamyr and Sandy Hill lines and centralizes all engineering work under one function. In addition this arrangement emphasizes the consultant status of the Vice-President, Pulp Machinery and relieves him of supervisory responsibility for project engineers. It further provides the optimum relationship with the Vice-President, Engineering, in that it ensures that he is apprised on matters relating to the Kamyr line in particular and to pulp machinery in general.

b. The Special Assignment Staff Assistant to the



PROPOSED ORGANIZATION ENGINEERING

FIGURE 1-7

Vice-President, Engineering be reassigned to either of the following:

1. To the office of the President for special assignment connected with plant expansion and improvement or for such projects as the President may direct.

2. To the Chief Engineer as a project engineer.

The lines of communications to this position are complicated by the fact that the incumbent is responsible to two (2) superiors. Under the Chief Engineer he would be available for general engineering projects and if required, special assignment.

c. On the managerial level the distinction between domestic and international engineering be eliminated. This is accomplished by expanding the Chief Engineer's responsibilities to include both domestic and international engineering projects. It eliminates the dual lines of authority to the project engineers presently shared by the Chief Engineer and the Manager, International Division and places project engineers for either domestic or foreign start-up and construction under a common superior.

d. The responsibilities and duties of the Chief Development Engineer, on the managerial level, be expanded to include research and development, preparation of engineering specifications, classification, simplification and standardization and product development. To implement this requires that development engineers be assigned to the Chief Development Engineer. Under this arrangement the Chief Engineer is relieved of the responsibility for coordination and progress reporting of research and development projects. This recommendation lends emphasis to the urgent need for a fully integrated research and development program as well as for a program of simplification and standardization.

e. On the managerial level under the Chief Engineer, expand responsibility to include: supervision over all engineering projects, pulp and paper equipment and foreign or domestic construction; preparation of and providing the estimating manager with Engineering Department cost data

for inclusion in estimates; and coordination with the Supervisor of Methods on matters relating to manufacturing methods. These functional relationships are shown on figure 1-7 by the dashed lines.

f. On the supervisory level the functions of Assistant Chief Engineer (Administrative) and Assistant Chief Engineer (Technical) be combined into one function, Assistant Chief Engineer. Pulp and paper making project engineers assigned to the Assistant Chief Engineer for conduct of assigned engineering projects.

1.5 Secretary-Treasurer. (Figure 1-8)

1.51 Present Organization.

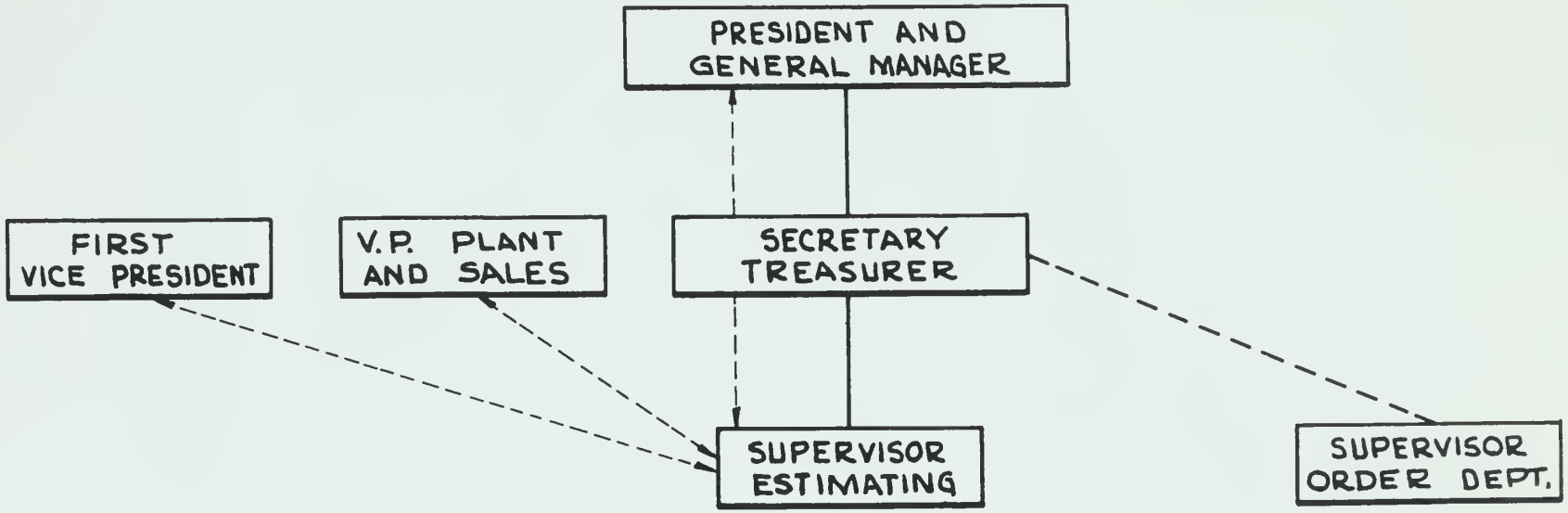
The Secretary-Treasurer reports to the President. He is responsible not only for signing the company's checks and contracts, but also for the management of the company's foreign sales operations. The latter responsibilities occupy the major portion of his time. He is, in addition, the Assistant Sales Manager.

1.511 Managerial Level.

Supervisor of Estimating - responsible for estimating job costs, prices, and preparation of proposals for forwarding to prospective customers. His proposals for large jobs are reviewed by top management. The Supervisor of Estimating also maintains records of proposals sent out and institutes follow-up action as appropriate. He reports direct to the Secretary-Treasurer, who formerly held the Supervisor of Estimating position. He also reports to the President, First Vice-President, and Vice-President for Plant and Sales.

Assistant-Secretary-Treasurer - has primary duties as Order Department Supervisor and Office Manager. In the Secretary-Treasurer's absence, the Assistant is authorized to sign checks for the company. He is not, however, empowered to commit the company contractually.

FIGURE 1-8



PRESENT ORGANIZATION SECRETARY-TREASURER

PROPOSED ORGANIZATION SECRETARY-TREASURER

UNDER THE PROPOSED ORGANIZATION THE SECRETARY TREASURER FUNCTION IS COMBINED WITH THE COMPTROLLER (SEE FIG 1-2)

1.52 Proposed Organization.

(a) We recommend that the position of Secretary-Treasurer be combined with that of Comptroller. (See Section 1.22-b).

(b) We recommend that the responsibilities for foreign sales management be transferred to the Sales Department.

(c) We recommend that the estimating function be transferred to the Sales Department, with the Supervisor of Estimating reporting direct to the Vice-President of Sales.

1.6 Comptroller Department.

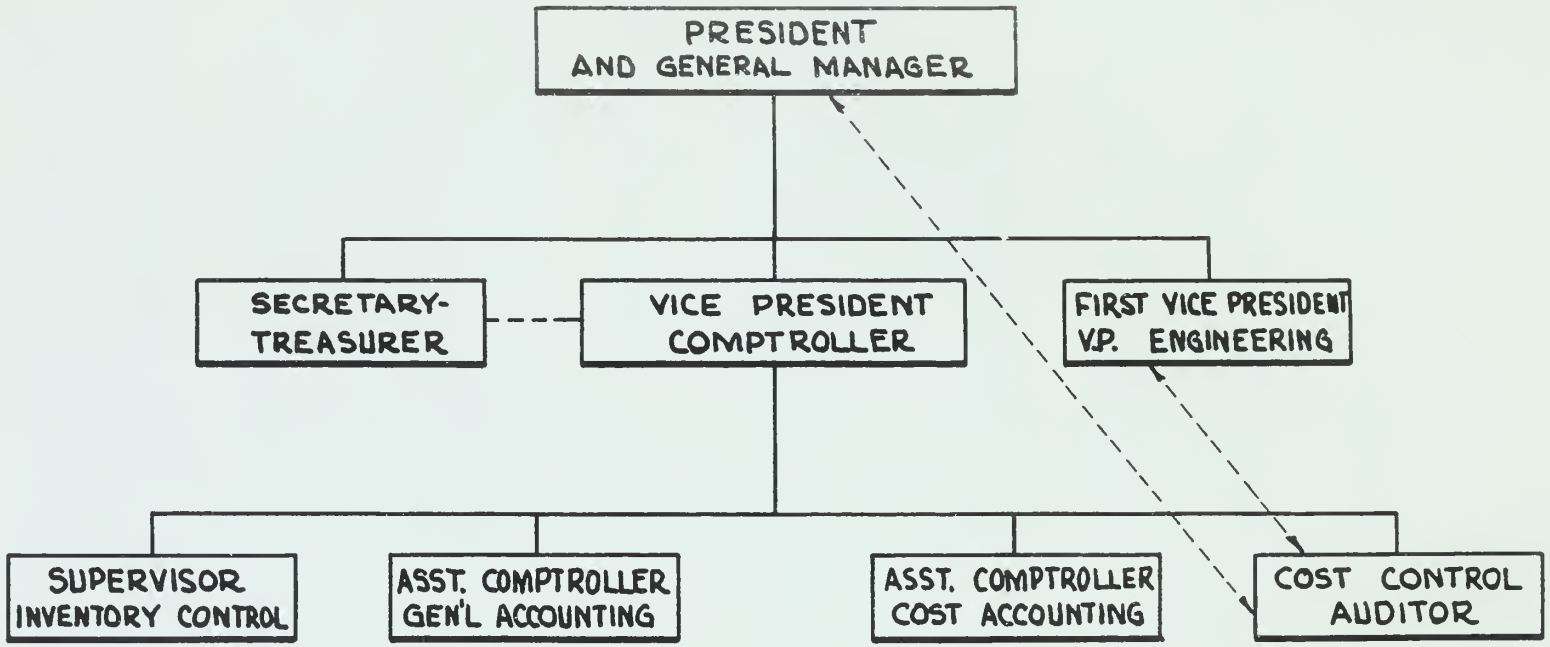
1.61. Present Organization. (Figure 1-9) The Vice-President and Comptroller heads-up the Comptroller Department and as the corporation's principal executive in the financial area is responsible to the President for the preparation of financial statements, cash forecasts, inventory custody and records, budgets, overhead studies, credits, collections and the books of account. In cooperation with other department heads, provides assistance in procurement of data for presentation to banks. Conducts special projects as designated by the President.

1.611 Supervisory Level.

Assistant Comptroller, Cost Accounting - reports to the Vice-President and Comptroller and is responsible for accumulating costs, labor, materials, and burden by customer job and indirect expense account. Also responsible for maintaining dollar value and quantity records of stock materials. In addition is responsible for the supervision of the cost control section.

Assistant Comptroller, General Accounting - reports to the Vice President and Comptroller and is responsible for general accounting matters, preparation of accounting procedures, employee and managerial payroll, dividends to stock-

FIGURE 1-9



PRESENT ORGANIZATION COMPTROLLER

holders and Employee Retirement Fund. As a collateral duty, acts as Treasurer of the Employees Credit Union.

Cost Control Auditor - reports to the Vice-President and Comptroller directly and to the President and First Vice-President and is responsible for the preparation of a weekly analysis of the expenditures and physical progress of all significant jobs. This report assists the Comptroller in preparation of the monthly profit and loss statement. In addition, from this analysis, a weekly report of critical jobs is prepared and distributed to managerial functions.

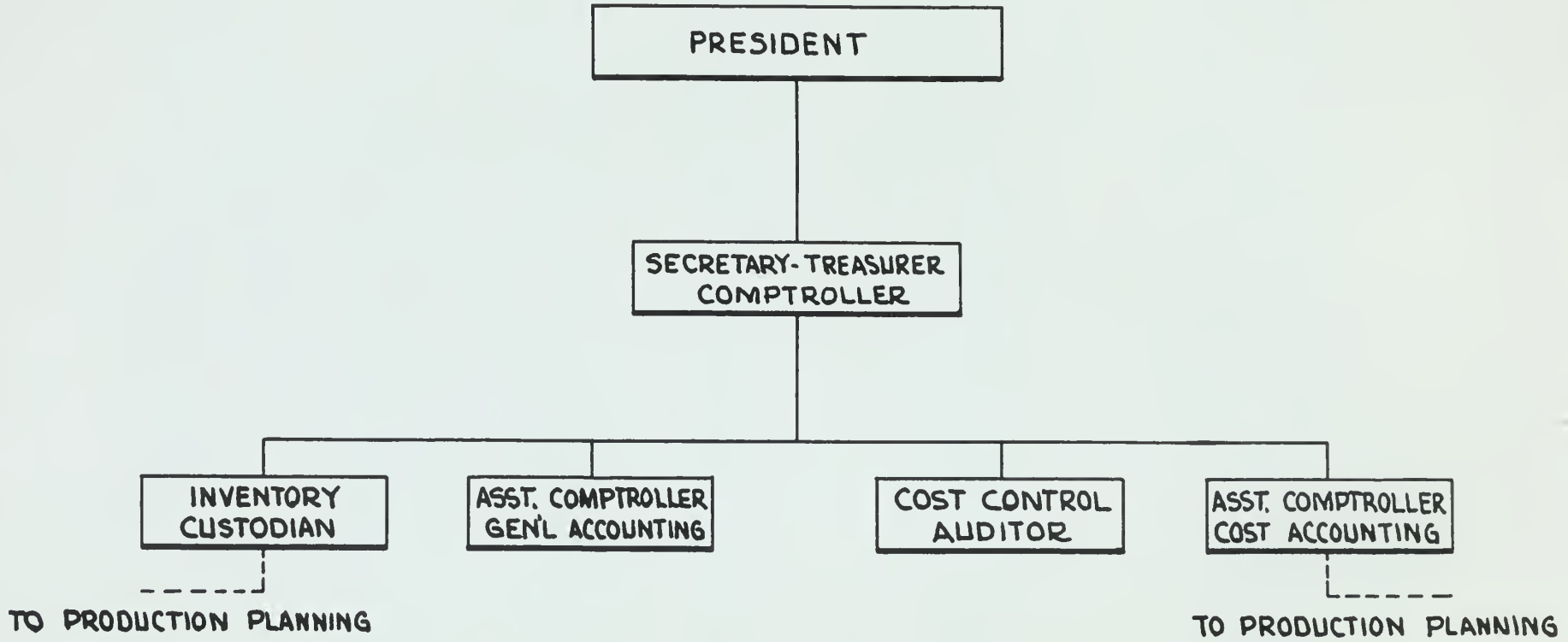
Supervisor of Inventory Control - reports to the Vice-President and Comptroller and is responsible for the physical control of all in process, general stock items and direct materials, keeping records of in process, direct materials and bin tags on stock material. This includes physical custody of materials and operation of the storerooms. It further includes a continuing audit of physical quantities and accounting records. The establishment of minimum and maximum inventory levels and reorder points is performed by the Purchasing Department.

1.62 Proposed Organization. (Figure 1-10) We recommend that:

a. On the top executive level the functions of Secretary-Treasurer and Comptroller be combined. The objection to this, as stated by the company's independent auditors, is that the two functions should remain separate and distinct to ensure the security and control of expenditures of funds. As previously stated in Section 1.22 (b), a review of the organizational structures of several medium and small companies disclosed that this practice is commonplace. In these, security and the control of expenditures of funds is accomplished by a system of internal audits.

b. The title, Supervisor of Inventory Control, be redesignated Inventory Custodian, without changing presently assigned duties and responsibilities. It is considered that this is a service function that can be provided Manufacturing most economically by the Comptroller's Department because of the availability of data processing machines,

FIGURE 1-10



PROPOSED ORGANIZATION COMPTROLLER

etc. The establishment of minimum and maximum inventory levels, reorder points and the control of initiating procurement requests are considered inventory control functions which should be exercised by Manufacturing. To accomplish this, it has been recommended that these responsibilities be delegated to Production Planning. See Section 1.32.

1.7 Purchasing Department.

1.71 Present Organization. (Figure 1-11). The Manager of Purchasing reports direct to the President, with duties and responsibilities as described previously in Section 1.216. He is assisted in his duties by an Assistant Manager of Purchasing, two Purchasing Clerks, a Receiving Clerk, and a Stockroom Clerk.

1.72 Proposed Organization.

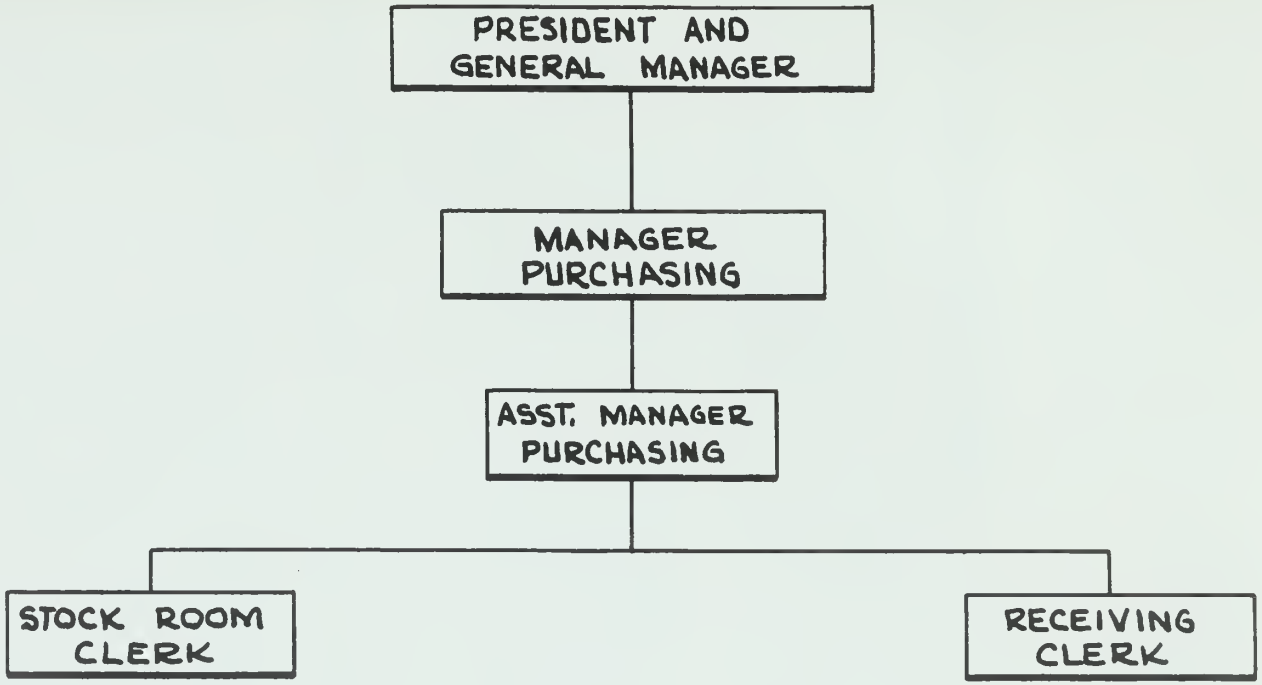
(a) We recommend that the purchasing function be reassigned as a responsibility of the Manufacturing Department. (See Section 1.22-c).

1.8 Committees. Although there are no committees established for the purpose of reviewing or establishing policy on the executive level, the President holds periodic informal meetings with the senior officers to discuss timely topics related to the company's activities. We recommend that:

(a) Management consider the advisability of establishing a formal Management Advisory Committee to be composed of the company's officers which would consider any major policy-making or coordinating problem brought to its attention through any member of the committee, such as:

1. Major capital expenditures.
2. Major research projects.
3. Expansion programs.
4. Establishment of profit objectives.
5. Determination of operating budgets.
6. Disposal of major company property.

FIGURE 1-11



PRESENT ORGANIZATION PURCHASING

PROPOSED ORGANIZATION PURCHASING

UNDER THE PROPOSED ORGANIZATION PURCHASING IS UNDER MANUFACTURING (SEE FIG 1-4)

7. Major organization changes.
8. New major objectives and programs.
9. New or modified policies or procedures.
10. Improvement on the presentation of operating and control data.
11. Market potential.

1.9 The "Informal" Organization. Figures 1-3 and 1-6 indicate that under present management there is almost complete disregard of the "chain of command" concept at all levels of the organization. This can be attributed to the company's distaste for organization charts and also to the lack of a company organization manual or formal written position descriptions. Position descriptions would under normal circumstances clearly specify line relationships between the various management positions.

It is assumed that top management favors direct communication with the lower supervisory and worker levels as a means of saving time and reducing administrative delays. Another consideration is undoubtedly the desire on the part of top management to demonstrate its active interest in all phases of company activity, adding to the feeling of 'family' solidarity. The value of direct communication in achieving these specific aims is unquestionable.

We believe, however, that there are also distinct disadvantages in operating under such a policy, and that these are serious enough to warrant some discussion.

Executives on the middle management level are those most adversely affected when the chain of command is ignored. The line manager, in particular, when assigned responsibility for the successful operation of an activity or group of activities, must also be given corresponding authority to enable him to meet those responsibilities. Even more important, he must be free to exercise that authority without interference. When a senior officer in the company deals directly with a line manager's subordinate, the officer is displaying an attitude of 'no confidence' in the manager, whether he intends it or not. The harm done the manager is compounded when he is thus demoted in the eyes of his subordinates. The inevitable consequence of such a practice is that lower management level

personnel will be encouraged to reverse the process and go direct "to the top" with matters which are rightfully within the area of responsibility of the line manager. By-passing the chain of command can be expected to be popular with the lower management levels, since it tends to elevate their status and increase their sense of importance to the organization. We believe, however, that in the final analysis the overall effect on the company is harmful. The following considerations support this belief:

(a) By-passing the chain of command wastes the abilities of the executives who are by-passed.

(b) By-passing the chain of command can easily result in duplication of management effort when the line manager is unaware of action already initiated within his department by a superior.

(c) By-passing the chain of command can create morale problems which will have an adverse effect on the company's operating efficiency.

(d) The top level executive, in consistently dealing with other than his own immediate subordinates in the line, effectively multiplies his span of control by several orders of magnitude. The net effect is to reduce the time and effort he is able to devote to the areas of management with which he should be primarily concerned.

It is recognized that rigid adherence to a formal organization structure is rarely productive of maximum efficiency. The formal structure will in practice be modified to some extent by the capabilities and personalities of the persons filling the positions. As pointed out in L. P. Alford's and J. R. Bangs' "Production Handbook", however, the informal channels of communications so established should always satisfy the following requirements:

1. Contacts or relationships should be initiated only with the consent of the immediate line superiors in each case.

2. Before any action is taken, it must be approved by the immediate line superiors.

Implicit in these requirements is the assumption that informal lines of contact will more commonly be established between individuals on the same or adjacent management levels, rather than between top level and low level executives as is the case at Sandy Hill.

The American Management Association publishes and issues, "The Ten Commandments of Good Organization". The following are pertinent to the foregoing discussion:

"1. Definite and clear-cut responsibilities should be assigned to each executive.

2. Responsibility should always be coupled with corresponding authority.

3. No change should be made in the scope or responsibilities of a position without a definite understanding to that effect on the part of all persons concerned.

4. No executive or employee, occupying a single position in the organization, should be subject to definite orders from more than one source. (This should not interfere with functional direction exercised by staff specialist departments, such as accounting, personnel, purchasing.)

5. Orders should never be given to subordinates over the head of a responsible executive.

7. No dispute or difference between executives or employees as to authority or responsibilities should be considered too trivial for prompt and careful adjudication."

1.10 Summary of Recommendations.

1. Separate the sales and manufacturing functions into two line departments, each under the administration of an officer at the top management level.

2. Combine the positions of Secretary-Treasurer and Comptroller.

3. Reassign responsibility for the purchasing function to the Manufacturing Department.

4. Establish an Industrial Relations Department, with the Manager of Industrial Relations reporting direct to the President.

5. Assign responsibility for the conduct of all sales activities, domestic and foreign, to the Sales Department.

6. Establish a Production Planning Section as staff to the Vice-President of Manufacturing.

7. Assign responsibility for all Foundry activity to the Works Manager in the Manufacturing Department.

8. Elevate the status of the Methods and Quality Control functions by making them staff activities reporting to the Vice-President of Manufacturing.

9. Reassign the Order Section and Estimating Section to the Sales Department.

10. Assign sole responsibility for the supervision of all project and field engineers to the Chief Engineer in the Engineering Department.

11. Separate R&D engineering from general engineering by assigning a number of development engineers to the Chief Development Engineer and permitting this section to work full time on a continuing research and development program.

12. Assign to the Chief Engineer responsibility for the execution of all engineering activity concerned with papermaking machinery, pulp machinery, whether foreign or domestic, with the exception of research and development engineering.

13. With the aid of the present incumbents prepare, promulgate, and maintain formal written position descriptions.

CHAPTER II - INDUSTRIAL RELATIONS

2.1 General. No provisions are made, in the organization's structure, for a single department responsible for all of the Industrial Relations functions of the entire company. The duties and responsibilities usually associated with an Industrial Relations Department are performed by individuals within the various operating departments and to a great extent by the employees themselves through self-perpetuating, employee-conducted, committees and associations.

A "family" relationship prevails throughout the organization. This spirit of cooperation, which emphasizes the dignity of the individual and the welfare of all employees, is so generally accepted and actively practiced that problems normally handled by an Industrial Relations Department are either non-existent or are solved by mutual agreement.

2.11 Major Personnel Categories.

2.111 Hourly Rated Employees. Hourly rated employees are factory and office employees who are paid on an hourly basis.

2.112 Non-Exempt Salaried Employees. Non-exempt salaried employees are those workers who do not meet requirements for exemption from overtime payment under the Fair Labor Standards Act.

2.113 Exempt Salary Employees. Exempt salaried employees are those workers meeting the requirements for exemption from overtime payment under the Fair Labor Standards Act. The three sub-categories defined by Federal statute may be summarized as follows:

1. Executive

   a. Salary of at least $55.00 per week.
   b. Manages a recognized department and directs a regular working force.
   c. Limited to spending 20% or less of working time in performance of "non-exempt" work.

2. Administrative

   a. Salary of at least $75.00 per week.
   b. Formulates or enforces major policy; requires exercise of independent judgment and discretion.
   c. Limited to spending 20% or less of working time in performance of "non-exempt" work.

3. Professional

   a. Salary of at least $75.00 per week.
   b. Work requires advanced scientific knowledge or original and creative thinking.
   c. Limited to spending 20% or less of working time in performance of "non-exempt" work.

2.12 Union Relations. Although the foundry employees are organized and affiliated with a local labor union, there is no collective bargaining between labor and management.

2.121 Shop Committee. The Shop Committee is composed of eight employees, representative of the workers from all shop departments. Members are elected annually and continuity and experience is maintained by nominating incumbents for re-election along with new nominees. The members select their own Chairman and Secretary.

This committee functions as a "go-between" for labor and management. Its primary function is to maintain fair and

impartial treatment of all employees and to promote harmonious relations between labor and management. Grievances are brought to the attention of the committee members who endeavor to reconcile the differences at the supervisory level. If this fails, they are referred to the next level of management and rarely is it necessary for them to be referred to higher levels.

Formal committee meetings may be called at any time by the Chairman, at the request of any member. Meetings with top management and all interested employees are held four times a year, at which time any employee may present a grievance and request consideration. Review of previous decisions and/or pending action may also be discussed at this time. Major management policies, which effect the welfare of the workers, are referred to the committee for comments and recommendations from the majority of the employees.

2.13 Fring Benefits.

2.131 Bonus Plan. A Bonus Plan for all employees has been in effect since 1942. This plan is based on a company policy of rewarding employees for company-wide performance without raising the wage rates. Management reserves the right to declare a bonus, and the decision rests upon the prosperity of the company, and the approval of the Board of Directors.

All non-salaried employees and certain salaried employees' bonus rates at present are computed at 5% of the preceeding six weeks' wages for the 4th of July bonus, and 5% of the preceeding nine weeks' wages for the Christmas bonus. Adjustments to these amounts may be granted to individuals on the basis of outstanding or meritorious performance. This rate for all employees may vary depending on the financial condition of the company. Other salaried employees and all executives are paid a bonus on an arbitrary merit system.

2.132 Pension Plan. The Sandy Hill Iron and Brass Works has a policy of voluntary retirement. An employee may continue to work as long as he desires, and is physically able to perform his duties. Normal retirement age is 70, and is based on 30 or more years of service.

Formula for Computing Retirement Allowance: The normal retirement allowance shall consist of an amount equal to 3/4 of 1% of the employee's average annual compensation during the five consecutive years for which his compensation was highest prior to normal retirement date, multiplied by the number of years of his credited service.

A member who has not reached his normal retirement date but who has attained age 60 and has seven or more years of credited service with the company, may request early retirement. The amount of the early retirement allowance payments shall be of equivalent actuarial value at the age of early retirement to the normal retirement allowance earned prior to early retirement date.

The pension plan is employee managed, with the Board of Directors having veto power. The plan is financed entirely by the company. A fund is maintained for this purpose. Annual contributions are made to this fund on the basis of employees-years-of-service averages.

2.133 The Sandy Hill Club. The Sandy Hill Club is an organization of company employees who have submitted and have had accepted, a suggestion or plan to improve operations, efficiency, production, health, or safety of the company. It is a self-governing body whose primary function, through various committees, is to solicit, receive and evaluate suggestions and plans for improvement and whose secondary function is to promote the welfare and social activities of all employees.

The club functions through three committees: 1) The Improvement and Development Committee, whose duty is to receive and evaluate suggestions and forward them to the Progress Committee with recommendations as to their feasibility and merit. 2) The Progress Committee, who receives and reviews suggestions from the Improvement and Development Committee, and through analysis or trial determines the estimated benefits to the company and forwards the same to the management with recommendations as to an award. 3) The Entertainment Committee whose duty is to provide social and other activities beneficial to the welfare of the employees of the organization. It is this committee that sponsors the

annual Children's Christmas Party, the Summer Picnic, Variety and Minstrel Shows, and recently engaged in preparation of the Centennial Celebration.

2.134 Vacation Plan. Employees who are hired prior to June 30 in any year are entitled to one week of paid vacation during the regularly scheduled vacation period after completion of one year of continuous service. Those employees who are hired between July 1 and December 31 in any year are entitled to one week of paid vacation during the second regularly scheduled vacation period provided they have continuous service during that period.

Employees who have completed five years of continuous service will be entitled to two weeks of paid vacation in the fifth year after completing their first vacation. Upon completion of ten years continuous service the employees are entitled to two weeks and two days of paid vacation. Thereafter an additional day is granted for each additional five years of continuous service.

Continuous service is defined as actually working a minimum of 70 percent of the regular working days. Broken service, beyond the control of the employee, due to sickness, accident, temporary lay-off due to curtailment of operations, or military service, is treated as continuous service.

Vacation pay is computed on the gross earnings from April 1st in the preceding year to March 31st in the current year. One week vacation is computed at 2% and two weeks at 4% of the gross earnings. Exception to this applies to employees hired subsequent to June 30 whose base is computed on 21 months gross pay for the first vacation.

2.135 Holidays. New Years Day, Memorial or Decoration Day, July Fourth, Labor Day, Thanksgiving Day, and Christmas are holidays with pay. In addition to the paid holidays listed above each employee is granted a holiday, with pay, on his birthday. If the birthday falls on Saturday, Sunday or Holiday, the employee has the option of taking off the workday immediately preceding or following.

In order to permit participation in local and national elections, each employee is granted two hours off on regularly scheduled election days.

2.136 Insurance. Group Insurance with the Metropolitan Life Insurance Company is offered each employee upon completion of three months service with the company. The plan provides death and disability benefits coverage for employees, and various medical expense coverage for both employees and their families. Premiums are paid by the company and the individual.

2.137 Sandy Hill Beneficial Association. This association was originally founded to provide a means of disbursing funds to various charitable organizations and to provide for the needs of employees in cases of adversity.

All employees are eligible immediately upon employment for membership in the Association. An annual general meeting of all members is held at which the Directors are chosen. The financing of the Association is provided by nominal contributions of the members, with a like amount contributed by the company. An annual audit is held, and a statement of monthly disbursements is published.

The Beneficial Association provides benefits in cases of death or adversity. It distributes funds to charities in the name of the employees of the company. The most important function is to provide financial benefits in cases of illness or disability to members during the period not covered by the insurance plan.

2.138 Termination Pay. In instances where employees are laid off for reasons beyond their control, they will be paid at the rate of one forty-hour week for employees with one year continuous service and at the rate of two weeks (80 hours) for employees with five or more years continuous service.

2.139 Sandy Hill Associates Credit Union. This Credit Union was founded a decade ago. Its purpose is to promote thrift among its members and to provide loans to them at reasonable

rates. The Credit Union is managed by the employees without company aid or subsidization. Any employee may become a member of the Credit Union by the purchase of a share. Total ownership of shares is limited. All operations of the Credit Union, its officers, and members, are governed by the By-Laws, and by Federal and State banking and financial regulations.

Loans are made to members on the basis of shares owned, at a rate of interest considered reasonable. Dividends are paid annually, and financial statements are published. Certain other financial services are also rendered to members.

2.1390 Miscellaneous. Additional fringe benefits of various types are also offered by the company. These benefits reflect an attitude which has made management-labor relations in the operation of the company both progressive and enlightened. Some of these benefits reach all employees, while others do not.

Free coffee is provided all employees daily during the coffee break and lunch period. An annual picnic is held, plus an annual banquet. Laundry service for working clothes is offered the workers at reduced rates. Towels are provided. Safety equipment is also provided. A full-time Nurse provides first-aid and other minor medical services. Some sport activities and certain off-duty educational courses are subsidized by the company.

2.2 Wage and Salary Administration.

2.21 Job Descriptions. All hourly-paid jobs are divided into grades. A brief description covers the job content of each grade. These descriptions are the result of a survey made by a consulting agency during World War II, and have never been revised.

Job descriptions have been prepared for all company engineering positions by the Engineering Department. Job descriptions for other salaried and executive positions were prepared in 1955, but are not utilized.

2.22 Job Evaluation. Wage rates were assigned to each job grade at the time the descriptions were written. Since that time revisions have been made on the basis of area wage surveys, general business conditions, and cost-of-living indices.

2.221 Area Wage Survey. Close cooperation with local plants permits the company to be advised of wage-rate changes. These changes usually occur annually as the result of collective bargaining agreements, since most industries in the area have union contracts.

2.222 Rate Setting. It is the policy of the company to pay comparable or better wages than those paid by industries in the surrounding area. When a general revision of local wage rates is made known, management decides the company's course of action and allows the employees to determine the method of application, i.e., across the board or straight percentage revision.

2.223 Salaries. Salaried employees and middle-management executives receive salaries comparable to those received in other industries of similar size and type. Top level executives' salaries are generally above those of similar industries.

2.23 Review of Wage Rates.

2.231 Hourly Employees. New employees will usually be hired below the highest grade in a job. At set intervals the employee's supervisor may, on the basis of job performance, approve an in-grade raise or raise to the next higher pay grade. This process continues until the employee is being paid at the top wage rate for the job, after which no further periodic wage review is made.

2.232 Apprentices. The New York State Apprenticeship Council determines the intervals of wage rate review for all apprentices. The company sets apprentice wages, reviews them at the

stated intervals, and grants increases if job performance is satisfactory.

2.333 Salaried Employees. The salaries of all administrative, professional, and executive personnel are informally reviewed twice a year by the President. Recommendations for increases, based upon meritorious performance, may be made by department heads. Final approval of salary revisions is made by the President.

2.3 Employment Supervision.

2.31 The Personnel and Safety Director. The Director is charged with the recruitment, selection, and placement of all shop employees. The procedures are outlined below:

2.311 Initial Application and Interview. A person seeking employment in the company shop reports to the Employment Office. The Personnel and Safety Director has the applicant fill out a brief employment application; he also conducts a cursory interview as to the qualifications for the particular job desired. References are contacted by the company.

2.312 Medical Report. If the qualifications of the applicant are satisfactory to the Personnel and Safety Director, an X-Ray of the applicant's back is ordered; applicants for foundry work also receive a chest X-Ray. An appointment for a medical examination is made, and the results forwarded to the Director. The completed application form and the medical report on each applicant are retained by the Director.

2.313 Method of Procurement. When help is required in any shop department, the immediate supervisor notifies the Vice-President of Sales and Manufacturing or the Plant Manager, who informs the Personnel and Safety Director. The Director consults his application files, contacts an applicant with the necessary qualifications, and informs him when to report for further processing.

2.314 Hiring. When the applicant reports to the Employment Office, he completes a "Record of Employee" which becomes the permanent company record. The Personnel and Safety Director explains the general working conditions, the various benefits, plans, and employee associations, and the company policies. He distributes literature concerning the company and the employees. The Timekeeper explains the time keeping system. An aptitude test may be administered by the Director at his option.

When this interview is completed, the Director accompanies the new employee to the shop department and introduces him to the supervisor who outlines the work and directs the employee when to report to work.

2.315 Employee Records. The permanent "Record of Employee" is maintained by the Company Nurse. Her duties include additions, deletions, or changes to these records. The original application form is retained by the Director. A pay card is made out for each employee by the office of the Comptroller.

2.32 The Office Manager. The duties of the Office Manager, in the employment of administrative personnel, parallel those of the Personnel and Safety Director, and the procedures are the same.

2.33 Executive and Professional Hiring. Procurement of personnel in the executive and professional categories is preceded by a personal interview conducted by the senior executive of the department. These interviews are arranged in advance, usually by formal correspondence. Trial periods of employment are used to determine the ability of the candidates, after which decision to hire is made. Turnover in these areas is small, and the policy of the company, although not formalized, is to develop employees for higher positions, thus reducing the occurrence of outside hiring.

2.34 Promotion. Employees who demonstrate capacity for greater responsibility are transferred to jobs more commensurate with their potentials. After a probationary period,

during which their performance is evaluated, they are either promoted to the higher status or are shifted to work within their capability. There is no systemized plan for development and advancement within the plant.

2.35 Discipline. Disciplinary matters are handled by immediate superiors. The informal organization allows employees to appeal disciplinary action to top management. Company policy seeks to be just and equitable, while imposing the minimum amount of punitive measures. Discharge for cause, the most stringent punishment, is ordered only after consultation with the President.

2.36 Lay-Off. It is the policy of the company to minimize lay-off of employees, unless forced to do so by the economic situation. The use of intra-plant transfers and redistribution of work helps prevent this. These procedures would not be possible under a union contract. This method of preventing lay-off approaches a guaranteed annual wage.

2.37 Unemployment Insurance. New York State Unemployment Compensation covers the company employees. The company is taxed for this insurance program by a system designed to encourage low turnover.

2.38 Workmen's Compensation and Disability Benefits. The New York State Workmen's Compensation Board administers a state-wide program of compensation and disability benefits for employees. This Board requires companies to provide workmen's compensation in the event of work-connected death or disability. The Employers Mutual of Wausau, Wisconsin insures the company in compliance with the directives of the State Board. The premium rate is based on past safety records.

The Compensation Board also requires employees to be covered for non-working disability. Employees contribute a nominal sum for the first three months of employment while they are ineligible for the group insurance coverage (2.136 above). At the end of this time, they may elect to continue the state coverage or drop it and participate in the group

insurance program.

2.4 Training.

2.41 On-the-Job Training.

2.411 Apprenticeship Training. Since 1944, the company has participated with the New York State Apprenticeship Council in training apprentices in the various trades within the shop. The program consists of four years of progressive supervised on-the-job training, supplemented by 144 hours a year outside study of related subjects at the local high school. A formal merit rating system is in effect. Semi-annual evaluation of performance, ability, co-operation, and safety habits is made. The "Employee Rating Chart" is completed, and promotions are made provided satisfactory progress and improvement are demonstrated. Wages are set by the company, and must be approved by the Apprenticeship Council.

2.412 Professional Training. Occasionally, engineers are assigned to various departments of the plant to observe practices and to expedite priority orders. The experience gained from first-hand observation enables the engineers to modify or adapt future designs for greater efficiency.

2.42 Off-Duty Training.

2.421 Special Training Programs. A company-prepared Supervisory Training Program, based upon a text by A. R. Latimer, "The Techniques of Supervision", is presented periodically. Attendance by supervisors is voluntary. A Foundry Training Program based upon a text, "A Treatise on Foundry Practices", by Joseph Nixon is also presented. Attendance by foundry employees is also voluntary. Supplementing these courses, selected employees are sent to Trade Association's training courses, Lincoln Electric's Symposium on Welding Techniques, and paper mills during actual installation of new machinery. The company also sponsers membership in various trade and

professional associations.

2.422 Correspondence Courses. The company has a liberal policy in regards to subsidizing correspondence courses for the employees. Anyone may take correspondence courses provided by reputable organizations and upon successful completion the company will pay the entire fee.

2.423 Adult Education Classes. The State Department of Education provides facilities and teachers for adult education at the local high school. The company encourages all employees to participate and maintains records of successful completion.

2.5 Safety.

2.51 Safety Programs. The Personnel and Safety Director is responsible for the preparation and administration of a safety program throughout the organization. In order to receive the most current information on safety practices and improvements, the company belongs to the National Safety Council. Through this organization they receive pamphlets, posters, and other literature pertaining to standards recommended for the safe operation of equipment, and other recommended practices for the reduction of industrial accidents.

The company participates in the Annual Accident Prevention Campaign sponsored by the Associated Industries of New York State and cooperates with this organization in promoting industrial safety. Monthly safety lectures, supplemented by safety films, are mandatory for shop foremen and supervisors. Safety posters are prominently displayed throughout the factory. The Director conducts daily inspections and maintains records of accidents by frequency and severity.

Certain items of personal safety equipment are provided by the company to employees engaged in hazardous work; other items are sold at greatly reduced prices.

2.52 Medical Facilities. A company dispensary, staffed by a Registered Nurse, is maintained to provide emergency treatment and first aid. A local doctor visits the dispensary twice weekly to provide medical service to employees and to advise on matters of plant sanitation. Complete medical records are kept of all employees. These contain a chronological record of sickness and accidents. First aid stations are maintained in strategic locations throughout the plant.

In addition to her primary duties, the Company Nurse maintains the personnel records and collects absentee records of the employees.

2.6 Plant Protection.

2.61 General. The responsibility for maintenance of physical security is vested in the Plant Protection Co-ordinator who is responsible to the Plant Manager for the organization and supervision of security, fire fighting, civil defense, and emergency mutual aid personnel.

2.62 Security Guards. Physical security of company property is accomplished by watchmen. At least one watchman is on duty at all times. Twenty-four hour surveillance of the plant, warehouses, and yards is provided by a roving patrol, covering pre-arranged routes. Time clocks and check stations assure continuity. Two of the guards are deputized by the county Sheriff's office.

2.63 Fire Protection and Organization. All buildings are equipped with overhead sprinkler systems. There are six fire hydrants strategically located throughout the area and connected to the main water tower. The employees are organized into emergency fire fighting teams. Each employee has a specific fire station and periodic training drills are carried out to acquaint them with their duties and to develop proficiency in fire fighting techniques.

2.64 Civil Defense Organization. The Sandy Hill Company is a community leader in organizing and cooperating in civil defense matters. The personnel are organized along military lines of authority and responsibility. The company is an integral part of the local Civil Defense System, and direct telephone lines link their switchboard with the county Civil Defense Headquarters. Total participation in drills is a matter of established policy.

2.7 Public Relations.

2.71 General. Public relations are the responsibility of the Assistant Vice-President. Items of general interest, including feature articles and personal accomplishments of employees, are released to the local press, radio, and television outlets. Open House, Ladies Day and plant visits are conducted occasionally.

2.72 Plant Publications, "Chips". In June 1944 the house organ "Chips" was established to provide a media for distributing information to employees. Copies are also mailed to a selected list of customers. Other publications include orientation pamphlets: "Sandy Hill and You"; "By-Laws, Sandy Hill Club"; "By-Laws of the Sandy Hill Associates Credit Union"; and "Employees Benefit Plan".

2.73 Educational Assistance. Working models of paper making machinery, catalogs, visual training aids and scholarships are provided schools and colleges teaching paper making as a trade or profession.

2.74 Community Relations. There is an active participation in community activities. The company sponsors projects and contributes both time and personnel in promoting pride and interest in civic affairs.

2.8 Appraisal of Current Conditions:. Labor-Management relations at the Sandy Hill Iron and Brass Works are excellent.

A communal spirit pervades all levels of the organization. The company has prospered; the employees enjoy good wages, numerous benefits, and job security. Certain factors are predominant in the attainment of this relationship.

a. Management recognizes and honors the individual and seeks to integrate each into a smooth-running productive group. The employees are not treated as "tools of production", but as integral parts of the company as a whole.

b. The small size of the labor force and the low turnover of personnel allow respectful familiarity between management and labor. Informality on and between all levels is evident.

c. Employee participation in certain management areas is encouraged. Employees actively aid management in reaching decisions affecting company policy in regard to employee-employer relations.

d. Since no union contract exists, management and labor work harmoniously, unfettered by restrictions, precedents, and procedures.

The company management, in a sincere effort to effect harmonious relations and promote the welfare of the employees, has fostered the attitude of close association of the workers and their families with the organization. It is possible that this policy reaches too deeply into their private lives. The apparent spontaneous participation in company-endorsed activities may, at times, be due to group pressures rather than to voluntary co-operation on the part of the employees. Paternalism could lead to over-dependence on the company and generate serious morale problems if a major reduction in the labor force were to become necessary.

Criticism of a successful labor-relations policy is difficult. However, certain practices in the field of Industrial Relations do not follow accepted academic management principles. A case in point that deserves mention is the inequity in the wage rates of the lower job categories. Highly skilled jobs, at present, pay wages comparable to similar skills in the area. Jobs in the lower unskilled classifications tend to pay higher wages than comparable jobs in the

area. This has been the result of across-the-board hourly wage increases, as voted for by the Shop Committee, and approved by management. This situation should be studied with the objective of adjusting wages according to contribution of effort.

2.9 Recommendations. We recommend that:

1. The duties, responsibilities, and prerogatives of the Shop Committee be explicitly determined and promulgated to all employees.

2. All existing job descriptions be reviewed and revised as necessary. Multiple job grades, proven by experience to be superfluous, should be simplified or eliminated. Each job description should delineate the duties, responsibilities, and authority assigned the position; its place in the organization structure; the immediate superior position and the subordinate positions. Job descriptions should be issued to each employee and his supervisor.

3. A merit rating system for all employees be inaugurated. Rating forms similar to those currently in use for apprentices should be prepared and periodic evaluation of each employee instituted. This appraisal will serve as a basis upon which a sound and systematic promotion, bonus, and separation policy can be founded.

4. An executive development program be placed in effect. The existing program is informal at best. Formalization will provide additional benefits in that juniors will be informed of their opportunities for advancement; will aid in developing talents necessary for increased responsibility and authority; and will create better morale by establishing definite goals and equal opportunity for promotion.

5. All Industrial Relations functions be centalized and consolidated. The head of this department would be responsible for the following duties:

a. Recruitment, selection, and placement of employees with the advice and consent of department heads concerned.

b. Maintenance of personnel records and responsibility for changes thereto.

c. Maintenance and periodic review of job descriptions.

d. Maintenance of merit ratings for all employees.

e. Periodic review of local wage rates.

f. Co-ordination and assistance in employee training programs.

g. Safety, Plant Protection, and Medical Facilities.

h. Advice to management on personnel matters.

i. Assistance and advice to employees in personal problems.

CHAPTER III - THE ACCOUNTING DEPARTMENT, GENERAL OFFICE ADMINISTRATION, AND THE PURCHASING DEPARTMENT

3.1 General Discussion.

3.1 Accounting. The importance of accounting cannot be over-emphasized. The accounting system as a whole may be considered as being the central nervous system of the industrial enterprise. It is the final repository of the results of operations. It is the ultimate memory of the organization. If it is well designed and implemented it can greatly assist management in achieving the objectives of the company. If it is not, it can lead to faulty decisions and pecuniary losses. This chapter presents a general discussion of the overall accounting system in use at Sandy Hill, followed by a more detailed discussion of the reports prepared, of the general accounting system, of the cost accounting system, and of the inventory custody system. In addition a discussion of the control functions of the Comptroller is presented.

3.12 General Office Administration. Office administration can be said to reflect the state of order of an enterprise and to influence it significantly. This chapter includes a discussion of communication methods, routing of mail and other correspondence, filing facilities, and office spaces and equipment.

3.13 Purchasing. The importance of purchasing at Sandy Hill is evidenced by the fact that up to 50% of the cost of the products sold are represented by purchased materials. The function is at present established as a separate department. This chapter discusses the organization and procedures used therein.

3.14 Recommendations. The final section of this chapter presents a summary of the recommendations concerning the above areas of operation.

3.2 The Accounting Department.

3.21 General. The Accounting Department at Sandy Hill occupies a position of importance. As the organization structure reveals, the department head is a senior officer with complete authority in the field of accounting and financial records and with direct access to the President of the company. The department is staffed with adequate numbers of competent, vigorous and well-trained employees and is equipped with the most advanced accounting machines compatible with the size of the organization.

3.22. The Accounting System. Essentially the accounting system at Sandy Hill might be characterized as conventional. It is considered to be neither meticulously detailed nor so broad as to produce only vague results. This conventionality, and also the adequacy of the system, is attested by the auditor's report which found the system to contain all of the necessary information for the annual audit, and which noted no exceptions from generally accepted accounting principles. There are certain detailed accounting practices that are peculiar to this accounting system and which will be explained in the course of this chapter. The accounting system uses a conventional series of accounts with which to record, accumulate, and extract information pertinent to the preparation of the annual Balance Sheet and the annual Statement of Income and Surplus. The cost system uses a series of accounts to record, accumulate, and extract business costs on a job basis. There is no tie-in between the general and the cost accounting systems. The job cost records are furnished to the group which prepares cost estimates for future work, and to the Comptroller for use in the preparation of a monthly internal audit of his estimate of profit and loss. The inventory records and physical custody are maintained by the Comptroller.

3.23 Additional Functions of the Comptroller. The Comptroller, in addition to the functions indicated in the preceding paragraph, is the chief financial officer of the company, responsible for maintaining company fluidity through such activities as stock issues, borrowing and investing funds, establishment of credit for both payables and receivables. He exercises im-

portant control functions through the establishment of budgets and the analysis of deviations therefrom. As department head the Comptroller is also responsible for the maintenance of an adequate, competent staff; for the establishment of adequate operating and reporting procedures; and for the provision of suitable office space and equipment.

3.24 Organization. As indicated above, these various accounting functions are performed by four groups: the Comptroller's office, the general accounting section, the cost accounting section, and the inventory control section. These groups are discussed in detail in the succeeding sections of this chapter.

3.3 Reports.

3.31 General. As with most business concerns, the principal product of the Sandy Hill Accounting Department is reports: annual reports which tell management where it stands and how it got there as a result of the year's operations; monthly reports which tell management 'how it goes' through the year; and special periodic or situation reports on matters of particular interest to management.

3.32 Annual Reports. Annual reports prepared for submittal to the directors of the company, to the stockholders, and for other purposes, are:

a. Balance Sheet
b. Statement of Income and Surplus
c. Annual Report

3.321 The Balance Sheet. (Figure 3-1) The balance sheet is of the comparative type and includes percentage-of-total figures and the increase or decrease from the prior year. It is prepared annually as of 31 December. The listing of accounts is conventional, being divided into:

a. Current Assets - consisting of Cash, Accounts Receivable, Inventories and Prepaid Items

The Sandy Hill Iron and Brass Works

Balance Sheet

At and Comparative

ASSETS	AT DETAIL	TOTALS	PERCENT TO TOTAL	AT DETAIL	TOTALS	PERCENT TO TOTAL	INCREASE OR (DECREASE)
CURRENT ASSETS							
Cash							
On Hand and in Banks							
Investments							
Conditional Sales Contracts							
Notes Receivable							
Accounts Receivable							
Trade							
Accounts Payable—Debits							
Interest Receivable							
Less: Reserve For Bad Debts							
Contract Work in Process Inventory							
(At Lower of Cost or Market)							
Inventory in Transit							
Materials and Stock							
Oil, Coke and Containers							
Work in Process—Trade							
Total Inventory							
Less: Progress Payments Against							
Firm Contracts in Process Mfg.							
Prepaid Items							
Insurance							
Expenses							
Deferred Expenses							
Interest							
OTHER ASSETS AND RECEIVABLES							
Conditional Sales Contracts							
Notes Receivable—Long Term							
Accounts Receivable							
Trade - Past Due							
Employees							

FIGURE 3-1

The Sandy Hill Iron and Brass Works

Balance Sheet

At and Comparative

ASSETS (Continued)	AT DETAIL	TOTALS	PERCENT TO TOTAL	AT DETAIL	TOTALS	PERCENT TO TOTAL	INCREASE OR (DECREASE)
PLANT							
(At Cost From 1913							
Depreciated Cost Value							
Real Estate							
Buildings							
Machinery and Equipment							
Patterns and Drawings							
Patents Issued and Pending							
Office Furniture and Equipment							
Foundry Machinery and Equipment							
Construction in Process							
Totals							
Less: Reserve for Depreciation and Amortization							
TOTAL ASSETS							

The Sandy Hill Iron and Brass Works

Balance Sheet

At and Comparative

LIABILITIES	AT DETAIL	TOTALS	PERCENT TO TOTAL	AT DETAIL	TOTALS	PERCENT TO TOTAL	INCREASE OR (DECREASE)
CURRENT LIABILITIES							
Notes Payable Banks							
Accounts Payable Trade							
Accounts Receivable—Credits							
Employees Deposits and Deductions							
Accrued Federal Income Tax—Current							
Accrued Federal and State Taxes—Other							
Accrued Expenses Payrolls and Others							
Progress Payments Against Firm Contracts in Excess of Costs							
OTHER LIABILITIES							
Notes Payable—Long Term							
DEFERRED INCOME							
Interest							

EMPLOYEES DEPOSITS — DEDUCTIONS
- Income Tax
- Bonds
- Credit Union
- S.H.B. Assoc.
- Metro. Ins.

TAXES
- F.O.A.
- N.Y.S.U.I.
- F.U.I.
- Federal
- Franchise
- Franchise

ACCRUED EXPENSES
- Vacation
- Service Vac.
- July Bonus
- Dec. Bonus
- Picnic
- Pensions
- Misc.
- Commission Accounts
- Payrolls Payable
- Royalties
- Interest Payable
- Insurance Dividend A/C
- Acc'd. Ins.—Compensation
- Less—Comp. Ins. Advance

The Sandy Hill Iron and Brass Works

Balance Sheet

XI and Comparative

LIABILITIES (Continued)	AT DETAIL	TOTALS	PERCENT TO TOTAL	AT DETAIL	TOTALS	PERCENT TO TOTAL	INCREASE OR (DECREASE)
CAPITAL AND SURPLUS							
CAPITAL STOCK							
PREFERRED STOCK (1)							
Authorized Shares							
Issued Shares							
CLASS "A" PARTICIPATING PREFERRED STOCK (2)							
Authorized Shares							
Issued Shares							
COMMON STOCK (3)							
Authorized Shares							
Issued Shares							
SURPLUS							
Capital							
Earned							
TAL LIABILITIES, CAPITAL AND SURPLUS							

(1) No Par Value, Non-Cumulative, $5 Per Share Per Annum Dividend Rate, Callable by Lot at $105, Plus $5 Per Annum, Less Dividends Paid, Stated Value $90 Per Share.

(2) Par Value $4, Non-Cumulative, 25¢ Per Share Per Annum Dividend Rate With Scheduled Increases Available Subject To Common Dividend, Callable by Lot at $5.25 Plus 25¢ Per Annum, Less Dividends Paid, Except Participating Dividends Paid.

(3) Par Value $1

b. Other Assets and Receivables - consisting of Conditional Sales Contracts, Notes Receivable, and Employee's Accounts Receivable.

c. Plant - consisting of fixed assets less reserve for depreciation.

d. Current Liabilities - consisting principally of short term Notes Payable, Accounts Payable, and various accrued expenses.

e. Other Liabilities - consisting of long-term Notes Payable

f. Deferred Income

g. Capital Stock and Surplus

Details of the general accounts are noted in Section 3.4. The Balance Sheet is considered conventional and satisfactory in its present form.

3.322 Statement of Income and Surplus. This statement (Figure 3-2) is also of the comparative type and makes provisions for expression of all data as percentages of net sales. On the same statement there are provisions for preparing further breakdown of certain income and expense categories. It is prepared annually as of 31 December. In the presentation of the results of the year's operations, gross profit is determined as the difference between net sales and the cost of machinery and parts manufactured and sold. This cost includes material purchases, manufacturing wages and expenses, and the increase or decrease in the work-in-process inventory. The work-in-process inventory consists of the direct labor and material applied to the various jobs in process plus the application of a burden rate which includes all other expenses of operation such as manufacturing indirect labor and material, administrative expenses, and selling expenses. This burden is currently applied by adding 3.1 dollars of expense per dollar of direct labor to the job costs. The increase or decrease in work-in-process then includes a burden rate, part of which is effectively deducted twice - once as part of the work-in-process.

The Sandy Hill Iron and Brass Works

Statement of Income and Surplus

For the Months Ended and Comparative

	DETAIL	MONTHS — YEAR TOTALS	PERCENT TO SALES	DETAIL	MONTHS — YEAR TOTALS	PERCENT TO SALES	
NET SALES							SALES
Gross Sales							Trade
							Engineering
COST OF MACHINERY PARTS AND MATERIAL SOLD							
MATERIAL AND RELATED PURCHASES							MERCHANDISE PURCHASES
							Trade
Merchandise Purchases and Related Costs							Other
Inventory Decrease or (Increase)							
Materials and Stock Used and Related Costs							
MANUFACTURING WAGES							FOUNDRY LABOR
							Non-Productive
Foundry							Premium
Shop							Allowed
Drafting							
Supervision—Production and Purchasing							SHOP LABOR
							Non-Productive
MANUFACTURING EXPENSES							Premium
							Allowed
Materials and Supplies—Foundry							
Materials and Supplies—Shop							DRAFTING LABOR
Supplies and Expenses—Drafting							Non-Productive
Fuel, Light and Power							Premium
Royalties							Allowed
Repairs and Maintenance							
Production Travel Expense							FOUNDRY EXPENSES (Increase)
Insurance							Coke Inv.—Decrease
Research and Development							
Payroll Taxes							FUEL, LIGHT AND POWER (Increase)
							Oil Inv.—Decrease
TOTAL MATERIAL AND MANUFACTURING EXPENSES							
WORK IN PROCESS INVENTORY — Decrease or (Increase)							PRODUCTION TRAVEL
							Auto Expense
COST OF MACHINERY							
AND PARTS MANUFACTURED AND SOLD							INSURANCE
							Compensation
GROSS PROFIT (Forwarded)							Fire
							REPAIRS AND MTCE
							Mobile Equipment

FIGURE 3-2

The Sandy Hill Iron and Brass Works

Statement of Income and Surplus

For the Months Ended and Comparative

			MONTHS — YEAR DETAIL	MONTHS — YEAR TOTALS	PERCENT TO SALES		MONTHS — YEAR DETAIL	MONTHS — YEAR TOTALS	PERCENT TO SALES		SALES TRAVEL
GROSS PROFIT (Brought Forward)											
SELLING EXPENSES											
Salaries											
Sales Travel and Expenses											
Advertising											
General Sales Expense											
GENERAL AND ADMINISTRATIVE EXPENSES											
Executive Salaries											
Office Salaries											
Administrative and General Travel											
Insurance—Employees Group											
Retirement Plan											
Taxes—Other Than Income											
Taxes—Social Security and Unemployment											
Office Supplies and Expenses											
Legal and Auditing											
Telephone and Telegraph											
Sundry Unclassified Expenses											
OPERATING INCOME BEFORE PROVISION FOR DEPRECIATION AND AMORTIZATION											
PROVISION FOR DEPRECIATION AND AMORTIZATION											
OPERATING INCOME											
OPERATING CREDITS											
Freight Adjustments											
Interest Earned											
Discounts Earned											
Commissions											
Gain From Sale of Assets											
Recovery of Bad Debts											
GROSS INCOME (Carried Forward)											

OFFICE SALARIES
Non-Productive
Premium
Allowed

TAXES
O. A. B.
N. Y. S. U. I.
F. U. I.

OFFICE SUPPLIES
Stat and Printing

The Sandy Hill Iron and Brass Works

Statement of Income and Surplus

For the Months Ended and Comparative

			MONTHS — YEAR			MONTHS — YEAR		
			DETAIL	TOTALS	PERCENT TO SALES	DETAIL	TOTALS	PERCENT TO SALES
GROSS INCOME (Brought Forward)								
INCOME CHARGES								
Foreign Taxes Paid								
Interest Paid								
Bad Debts and Reserve								
Loss on Sale of Assets								
INCOME BEFORE PROVISION FOR FEDERAL INCOME AND STATE FRANCHISE TAXES								
Estimated Federal Income and State Franchise Taxes								
NET INCOME FOR YEAR TO DATE								
SURPLUS—BEGINNING								
Add—								
Total								
Less—								
Dividends Paid								
SURPLUS—ENDING								

inventory which is deducted from sales as part of the cost of goods sold, and a second time in the deduction of the various expenses, which make up the burden rate, from the gross margin. The amounts involved are so small, however, as to be considered negligible in their effect on the operating statements. There is no finished goods inventory maintained as such (see paragraph 3.422). Selling and administrative expenses are separately detailed and the totals are subtracted from the gross profit to provide operating income before provision for depreciation and amortization, which item, as a matter of practice, is detailed separately. Operating credits, or miscellaneous income, and income charges are added and subtracted respectively to obtain income before taxes. Subtraction of annual income and franchise taxes gives the net income for the year. A surplus reconcilation is provided immediately following the derivation of the net income, and the resulting ending surplus is carried to the Balance Sheet for the period. The Statement of Income and Surplus has been developed to meet the requirements of operations at Sandy Hill, and it is considered satisfactory in its present form.

3.323 Annual Report. This report for the stockholders and others interested in the company is prepared jointly by the Accounting Department, top management officials, and advertising and publicity personnel. Inasmuch as 1958 marks the 100th anniversary of the Sandy Hill Iron and Brass Works in the past year's report considerable space is devoted to a history and review of progress. Simplified financial statements are presented for the years 1954, 1955, 1956, and 1957, with explanatory remarks. There is a statement by the external auditors, and a breakdown of the disposition of the sales dollar.

3.33 Monthly Reports. There are a great number of these reports prepared to keep management informed as to the progress and effectiveness of operations month by month. In general the titles of these reports are highly indicative not only of their contents but also of their use. Accordingly, with some exceptions, they will only be listed, without explanatory remarks.

3.331 The Comptroller prepares monthly reports for the purposes of appraising top management of the progress of the company operations, and as a basis for various management decisions which must be made throughout the year.

The Balance Sheet is brought up to date monthly in working sheet form including various adjustments, accruals, and deferred items.

The Statement of Income and Surplus is prepared monthly in working sheet form showing the profit for the month and cumulative figures for the year to date.

The Comptroller prepares a summary of operations. This report enables the Comptroller to check the general accuracy of the customary financial reports by developing a monthly profit and loss figure from other sources of information. This second operating figure, which should correspond closely to the one derived from the general accounts, is derived as follows:

Profit or Loss on Actual Shop Costs vs. Sales Billings

plus

Profit or Loss on Inventory Adjustment - this usually represents charges to jobs which have been previously billed

plus

Profit or Loss on Shop Costs for the Month - represents the difference between costs charged to the jobs and the actual expenses incurred

plus

Process Inventory Adjustment

gives

Profit or Loss for the Month

A Cash Forecast is prepared quarterly based on a projection of sales and expenses.

3.332 Monthly reports prepared by the general accounting section furnish information for use by the Comptroller in the preparation of his monthly statements and/or for analysis by the Comptroller or other officials of the extent and trend of certain types of expenditures or accrued items. These reports are:

a. Notes Receivable - analysis by customer and by long and short term

b. Accounts Receivable - monthly analysis and aging of accounts

c. Interest Receivable - accrued interest as earned

d. Material in Transit - monthly listing of invoices left in transit

e. Returnable Containers - record of receipt, return, and inventory of drums, etc.

f. Depreciation Schedules - itemized listing of depreciation of fixed assets

g. Prepaid Insurance Distribution Schedule

h. Accounts Payable - monthly analysis

i. Sales - monthly analysis by salesman, territory and product

j. Foundry Expense - monthly analysis

k. Shop Expense - monthly analysis

l. Mobile Equipment Expense - monthly analysis

m. Engineering Expense - monthly analysis

n. Advertising Expense - monthly analysis

o. Sales Expense - monthly analysis

p. Computation of Monthly Compensation Insurance Premium

q. Office Expense - monthly analysis

r. Miscellaneous General Expense - monthly analysis

s. Monthly Trial Balance - of ledger accounts for use in preparing and balancing financial statements

t. Monthly Foundry Operations Statement - monthly analysis of foundry output and expense

3.333 Monthly reports prepared by the cost accounting section are for use, primarily, in the operation of the various estimating and control functions. The estimating functions are described in Chapter 6. Control functions are described in Section 3.6 of this chapter. The reports prepared are:

a. Monthly Report of Balances - of all accounts

b. Work-in-Process by Jobs - for use in estimating profit by comparing costs with estimates

c. Monthly Foundry Report - see paragraph 3.331 above

d. Monthly Rework Report

e. Monthly Junk Report

f. Stock Ledger Summary

g. Monthly Stock Report - on items completed for stock, on a comparative basis, with previous costs and times for the same parts

3.34 Special Reports. As the classification indicates, special reports are usually of a non-routine nature. There is, however, one weekly report of interest - the Non-Productive Labor Report. Prepared by the cost accounting section, this report is a schedule of non-productive time charged by individuals on their time cards. It includes all items except those charged to a productive job. Management uses this report as an indication of the efficiency of the supervisors in the utilization of their men. The tendency therefore is for the supervisors to influence, to the extent possible, the recording of time to productive effort rather than to non-productive. The result is likely to be a somewhat erroneous recording of times. This is quite readily done and is not subject to efficient control due to the lack of time standards as discussed elsewhere. This in turn results in erroneous, inflated times being recorded for the performance of various jobs, further contributing to a lack of real knowledge of accurate labor costs for any job. It is recommended that emphasis on this report as a reflection of supervisory efficiency be reduced. The result should be more accurate recording of the production times required to do a job, more accurate knowledge of the real costs of non-productive labor, and a better basis for estimating the true labor costs of any job.

3.4 General Accounting System.

3.41 General. The general accounting system is supervised by an Assistant Comptroller for General Accounting assisted by three others. The present system was installed in September, 1953 and resulted in a 50% reduction from previous costs. The general accounting system can best be described with reference to the formats of the Balance Sheet and the Statement of Income and Surplus which were discussed in the preceding section. They are considered here as a summary of the chart of accounts. The following discussions will consider first the asset, liability, and net worth accounts as summarized by the Balance Sheet and then the income and expense accounts as summarized by the Statement of Income and Surplus.

3.42 Asset Accounts.

3.421 Reserve for Bad Debts. A token Reserve for Bad Debts account is maintained on an annual basis. $1000 per month is charged to and accumulated in the reserve account. At the end of the year the balance of the account is credited back into the Bad Debt Expense account. For the past 10 years there has been only one significant bad debt resulting in a loss of $6894.76 with approximate sales for that year of $7,500,000. Accordingly it has not been considered practicable to utilize an average percent of sales basis for charging to this reserve. It is considered that the method employed is sound.

3.422 Finished Goods Inventory. No Finished Goods Inventory is maintained except material which is manufactured for stock and which is accounted for as such. All other material is considered as sold to the customer at various stages of its completion. All goods are manufactured on the basis of a customer order. The customer makes a down payment at the time he makes the order and agrees to make progress payments as the work progresses with a final payment when the goods have been completed and shipped. Sandy Hill maintains these down payments and progress payments as liabilities until a sufficient amount of work has been accomplished to debit the Merchandise Sales account. The Work-in-Process Inventory then is the sum of the costs charged to all jobs in process at any time less any portion of these costs which have been taken as sales income. These Work-in-Process costs include a burden cost. A single burden rate is used for the whole company and is expressed as dollars per direct labor dollar. This burden includes all indirect manufacturing expenses, indirect engineering expenses, office, administrative, and executive expenses, and selling expenses. The significance of this burden structure as it influences the Statement of Income and Surplus has been discussed in Section 3.322.

3.423 Patents. Patents are capitalized at their cost to the company and amortized over their expected life. No major expenses are allowed on developmental work without the approval of a detailed developmental project by the

President. In this way it is possible to collect all significant costs of obtaining a patent.

3.424 Patterns and Drawings. Although an account exists for Patterns and Drawings, these are capitalized only when it is expected that they will be used many times to produce standard items. In general the costs of preparing drawings and patterns are charged to the job for which they were originally incurred. Copies of the drawings are provided to the customer as necessary. Patterns are retained by Sandy Hill. At the present time a very large number of patterns are being held in storage. A separate study is being made to determine an economical pattern retention policy.

3.425 Depreciation. The majority of the physical assets of Sandy Hill are of such an age that depreciation is determined on a straight line basis using a valuation determined in 1913 as the base for assets acquired before that date. However, equipment purchased since 31 December 1957 (and equipment to be purchased in the future) is depreciated on the basis of a constant percentage of diminishing value, for the first half of the life of the equipment. In addition, since some equipment was purchased in the past to perform defense contract work, a U.S. Government Certificate of Necessity permits writing off the value of this equipment in five years for tax purposes. Sandy Hill maintains a separate set of depreciation records on these items for tax purposes in order to maintain consistency in its normal depreciation policies.

3.426 Bank Accounts. Bank accounts are maintained in several banks in the general area of Hudson Falls, in Albany, and in New York City. The primary local bank, The First National Bank of Hudson Falls maintains several accounts to permit easy balancing of specific items such as payroll. The principal source of borrowed money is the State Bank of Albany.

3.427 Notes Receivable. The Notes Receivable account is used exclusively for holding foreign notes which the company is required to accept by the Export-Import Bank when foreign sales are financed through this bank. These notes are generally for

10-year periods. It is the practice of Sandy Hill to hold these notes as long as practicable to gain their relatively high rate of interest (averaging 5½%).

3.428 Material-In-Transit. The Material-in-Transit account is used as a clearing house for all purchased materials. When a supplier's invoice is received, this account is debited. When the material has actually been received and accepted, it is credited and the account or job for which the material was purchased is debited. At the end of an accounting period then, the balance in this account represents assets of the company which have not been received.

3.429 Miscellaneous. Individual receivable accounts are maintained for many employees. This results from the company's policy of purchasing personal items for the employees at the company discount. Also many individual Travel Advance accounts are maintained to account for travel funds of the personnel travelling for the company. Several deferred expense accounts exist in order to spread the impact of special expenses over several months, such as the catalogue, annual banquet, audit, and some tax expenses.

3.43 Liability Accounts. The liability accounts are the normal accounts for a manufacturing industry. Only two items are worthy of note. A Notes Payable - Officers account exists, (but is not in current use) to pay officers of the corporation bonuses in the form of notes. This permits the payment of a bonus without an immediate impact on working capital. In addition several accounts exist for accruing expenses such as insurance, taxes and bonuses.

3.44 Capital Structure. Management of Sandy Hill is vested in the holders of 201,000 shares of common stock of par value $1.00. Ownership is vested in the common stockholders; in the holders of 3,500 shares of regular preferred stock with no par value, paying $5.00 per share per annum, callable by lot at $105.00, with a stated value of $90.00; and in the holders of 88,244 shares (118,000 authorized) of class "A" participating preferred stock of par value $4.00, non cumu-

lative, 25¢ per share per annum dividend with scheduled increases available subject to common dividend (10¢ increase in 1957), callable by lot at $5.25 plus 25¢ per annum less dividends paid, except participating dividends paid.

3.45 Income and Expense Accounts. The income and expense accounts can best be considered with reference to the format of the Statement of Income and Surplus since this is an outline of these accounts in the same manner that the Balance Sheet is an outline of the Asset, Liability, and Net Worth accounts. Expenses are broken down into labor and material categories. Labor is collected by function (shop, foundry, engineering, sales, and administrative) and further as productive, non-productive, premium, or allowed as appropriate. Material, services, and miscellaneous expenses are collected by function as above. This permits the analysis of expenses by function and permits the assignment of responsibility for control of these expenses. Depreciation, interest paid, bad debt expense, foreign taxes, and losses on sales of assets are listed separately and not charged to functions. Income primarily results from sales, however there are several minor sources of income including interest, recovery of bad debts, rentals, and gain on sale of assets.

3.46 Processing of Data. The several systems for the processing of data are recorded in detail on the flow charts (Figure 3-3 thru 3-8) which follow this section. These systems are based on the use of the National Cash Register Accounting Machine #31M. The forms used have all been devised by Sandy Hill personnel. The following systems have been plotted:

a. Cash Receipts (Figure 3-3)
b. Sales Summary (Figure 3-4)
c. Salary Payroll (Figure 3-5)
d. Hourly Payroll (Figure 3-6)
e. Cash Disbursements (Figure 3-7)
f. Recording Accounts Payable (Figure 3-8)

Subsidiary Accounts Payable and Accounts Receivable Ledgers are maintained. The following Journals are maintained:

PROCESS: CASH RECEIPTS

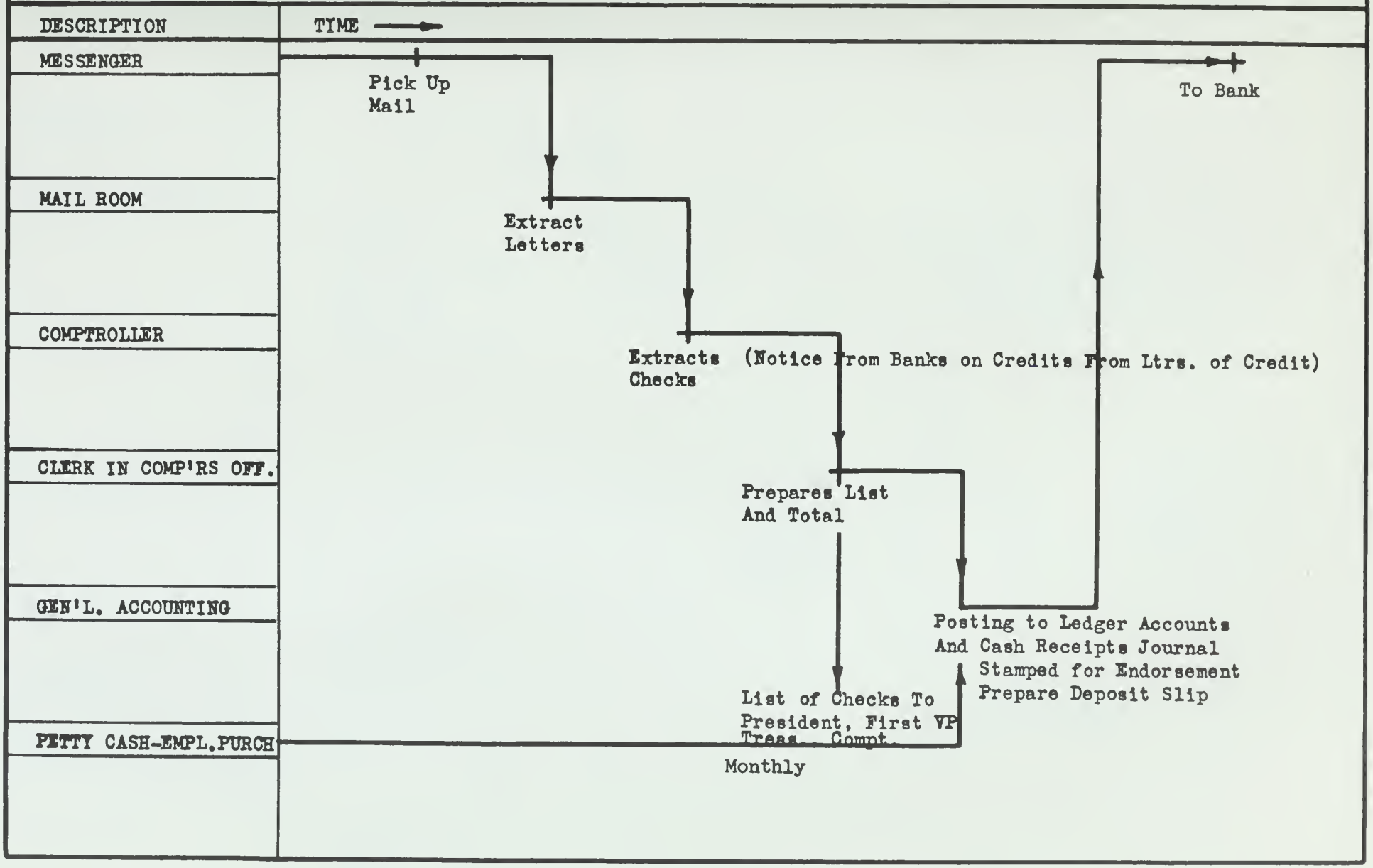


FIGURE 3-3

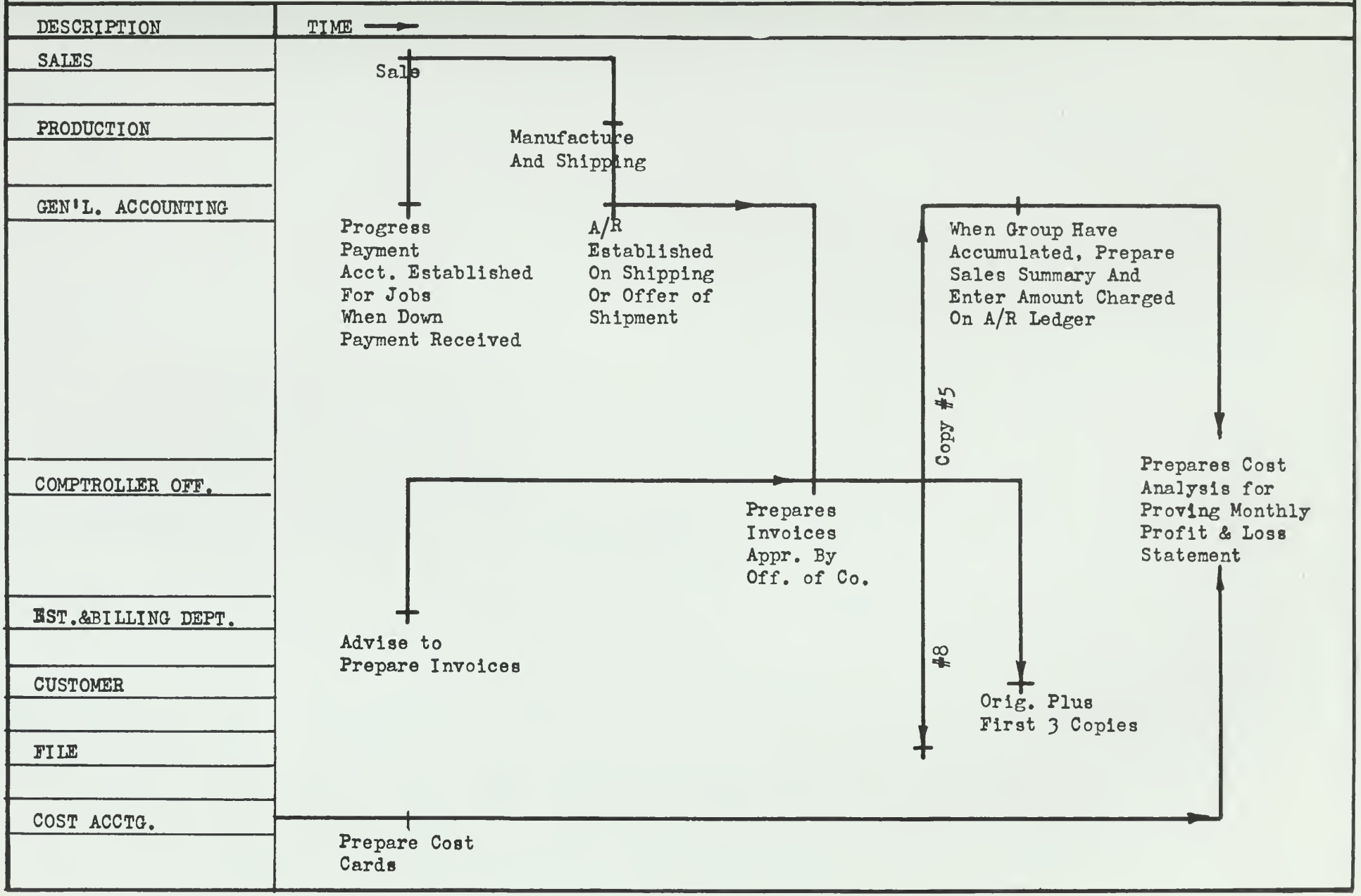
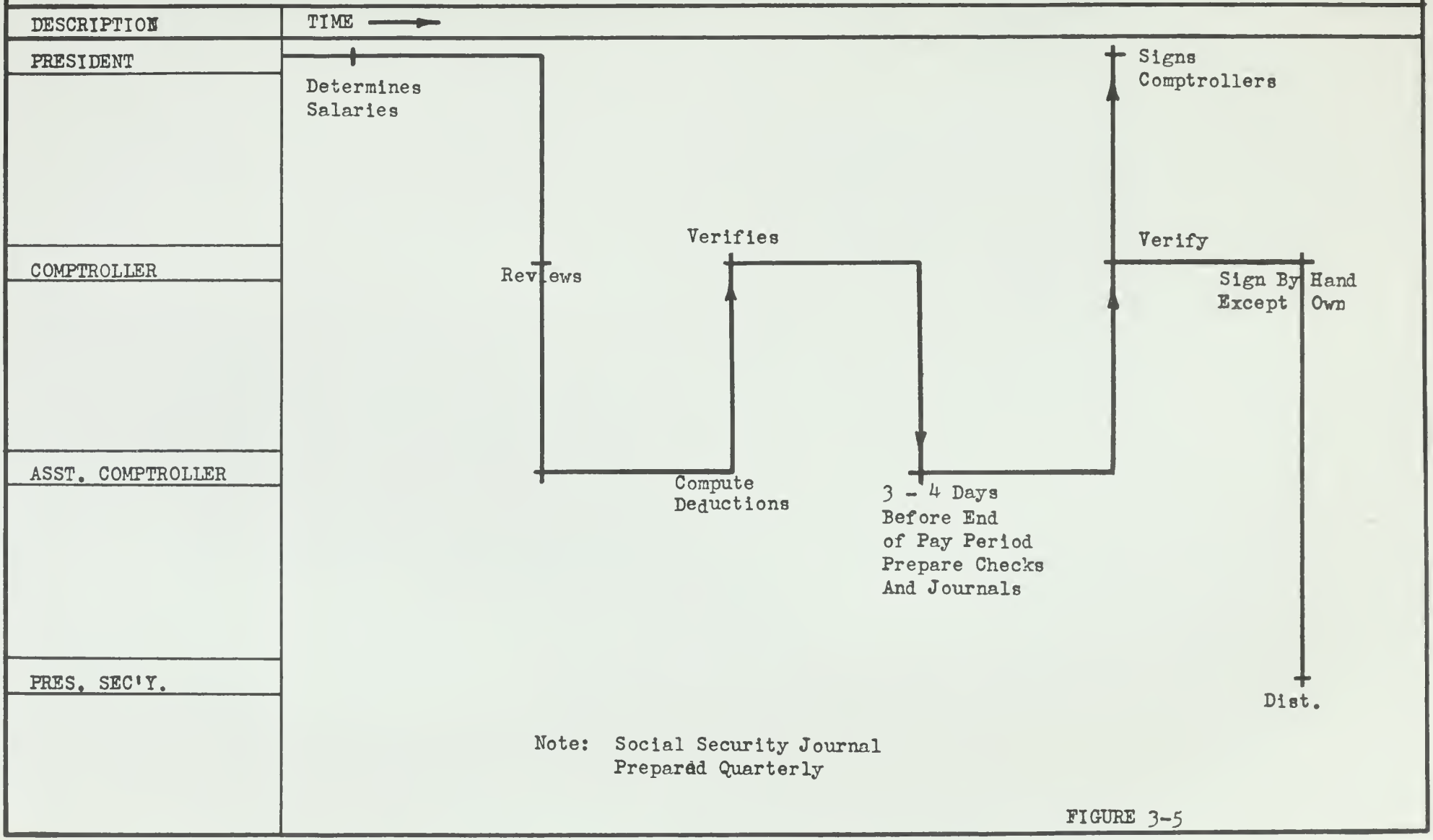

DESCRIPTION
TIME
SALES
PRODUCTION
GEN'L. ACCOUNTING
COMPTROLLER OFF.
EST.&BILLING DEPT.
CUSTOMER
FILE
COST ACCTG.
Sale
Manufacture And Shipping
Progress Payment Acct. Established For Jobs When Down Payment Received
A/R Established On Shipping Or Offer of Shipment
When Group Have Accumulated, Prepare Sales Summary And Enter Amount Charged On A/R Ledger
Copy #5
Prepares Invoices Appr. By Off. of Co.
Prepares Cost Analysis for Proving Monthly Profit & Loss Statement
Advise to Prepare Invoices
#8
Orig. Plus First 3 Copies
Prepare Cost Cards

FIGURE 3-4

PROCESS: PAY ROLL, SALARY



Note: Social Security Journal Prepared Quarterly

FIGURE 3-5

PAYROLL, HOURLY

WORK WEEK: SUNDAY - SATURDAY

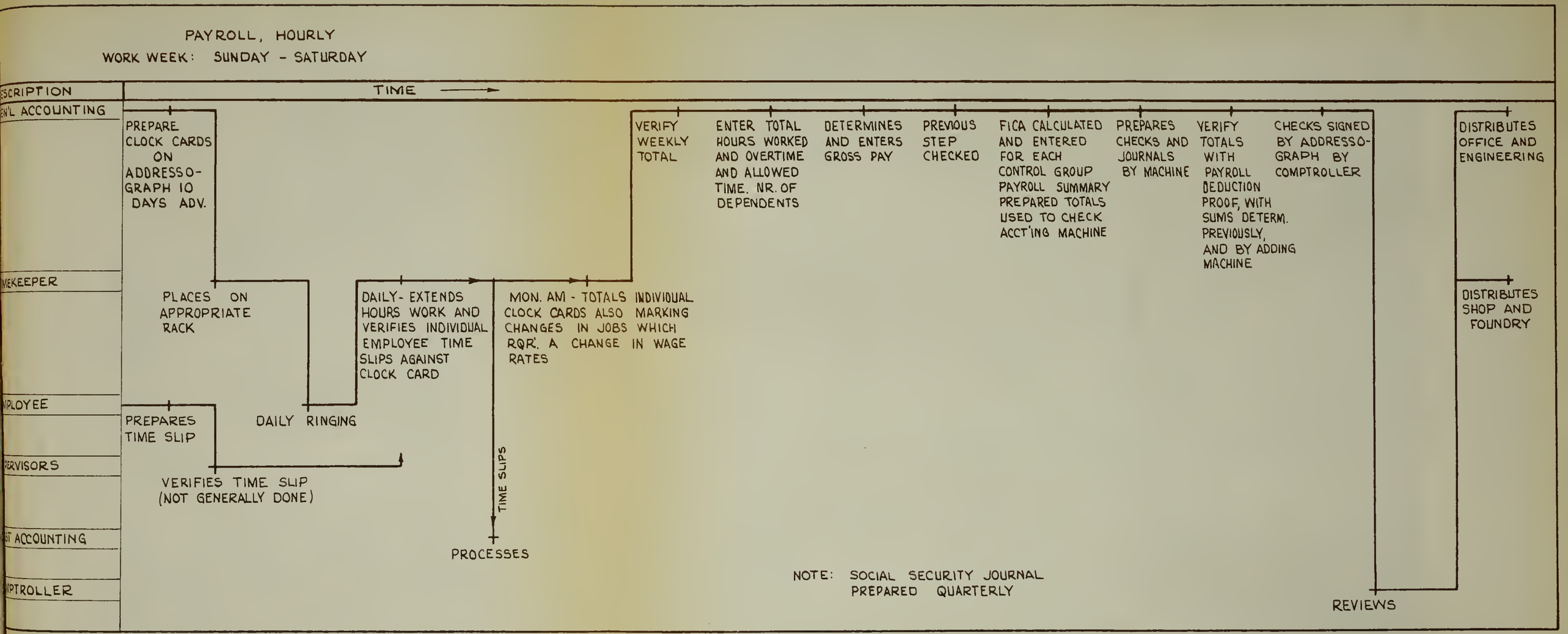

ESCRIPTION
TIME
EN'L ACCOUNTING
MEKEEPER
MPLOYEE
ERVISORS
ST ACCOUNTING
MPTROLLER
PREPARE CLOCK CARDS ON ADDRESSO-GRAPH 10 DAYS ADV.
PLACES ON APPROPRIATE RACK
PREPARES TIME SLIP
DAILY RINGING
VERIFIES TIME SLIP (NOT GENERALLY DONE)
DAILY- EXTENDS HOURS WORK AND VERIFIES INDIVIDUAL EMPLOYEE TIME SLIPS AGAINST CLOCK CARD
MON. AM - TOTALS INDIVIDUAL CLOCK CARDS ALSO MARKING CHANGES IN JOBS WHICH REQR. A CHANGE IN WAGE RATES
TIME SLIPS
PROCESSES
VERIFY WEEKLY TOTAL
ENTER TOTAL HOURS WORKED AND OVERTIME AND ALLOWED TIME. NR. OF DEPENDENTS
DETERMINES AND ENTERS GROSS PAY
PREVIOUS STEP CHECKED
FICA CALCULATED AND ENTERED FOR EACH CONTROL GROUP PAYROLL SUMMARY PREPARED TOTALS USED TO CHECK ACCT'ING MACHINE
PREPARES CHECKS AND JOURNALS BY MACHINE
VERIFY TOTALS WITH PAYROLL DEDUCTION PROOF, WITH SUMS DETERM. PREVIOUSLY, AND BY ADDING MACHINE
CHECKS SIGNED BY ADDRESSO-GRAPH BY COMPTROLLER
REVIEWS
DISTRIBUTES OFFICE AND ENGINEERING
DISTRIBUTES SHOP AND FOUNDRY
NOTE: SOCIAL SECURITY JOURNAL PREPARED QUARTERLY

FIGURE 3-6

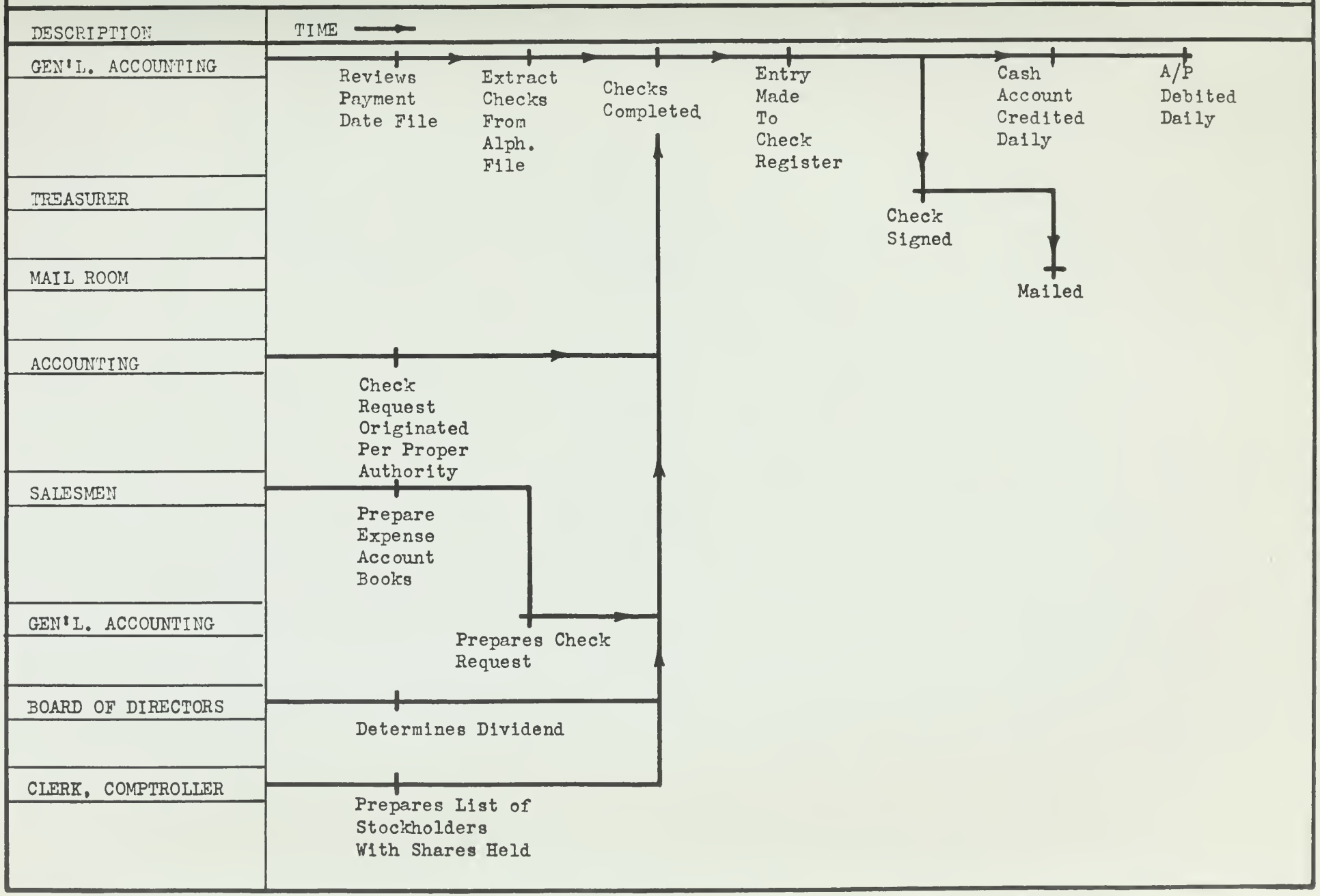

DESCRIPTION
TIME
GEN'L. ACCOUNTING
Reviews Payment Date File
Extract Checks From Alph. File
Checks Completed
Entry Made To Check Register
Cash Account Credited Daily
A/P Debited Daily
TREASURER
Check Signed
MAIL ROOM
Mailed
ACCOUNTING
Check Request Originated Per Proper Authority
SALESMEN
Prepare Expense Account Books
GEN'L. ACCOUNTING
Prepares Check Request
BOARD OF DIRECTORS
Determines Dividend
CLERK, COMPTROLLER
Prepares List of Stockholders With Shares Held

FIGURE 3-7

RECORDING ACCOUNTS PAYABLE

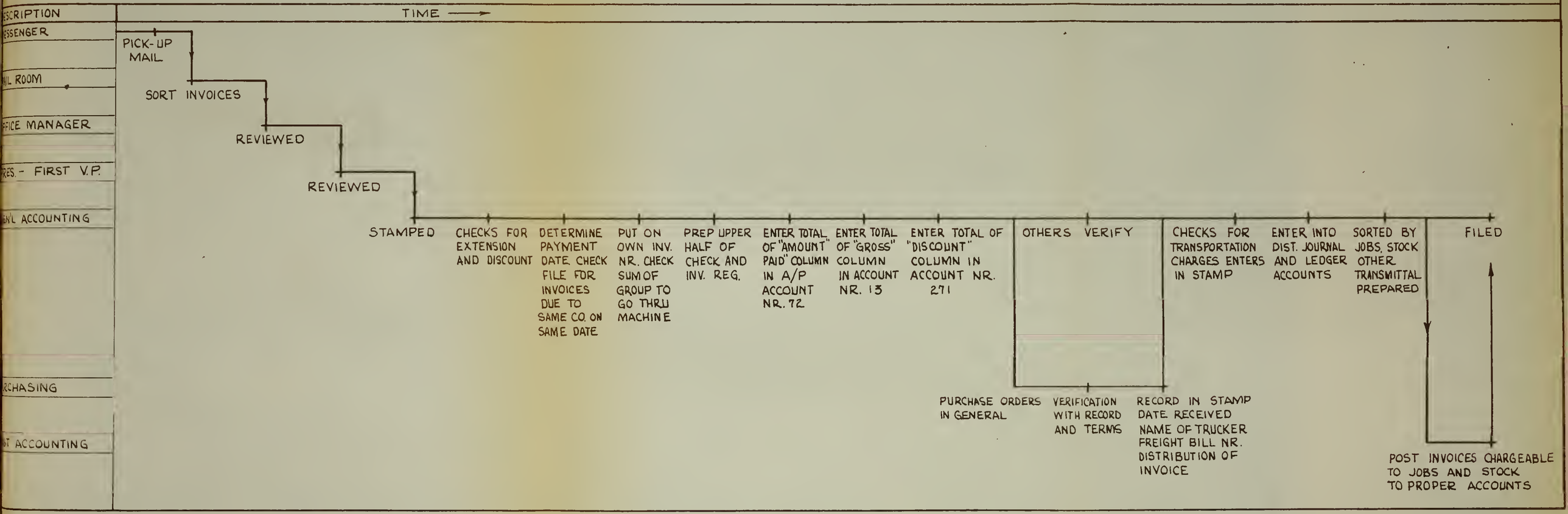

ESCRIPTION
TIME
ESSENGER
PICK-UP MAIL
AIL ROOM
SORT INVOICES
FFICE MANAGER
REVIEWED
RES. - FIRST V.P.
REVIEWED
EN'L ACCOUNTING
STAMPED
CHECKS FOR EXTENSION AND DISCOUNT
DETERMINE PAYMENT DATE. CHECK FILE FOR INVOICES DUE TO SAME CO. ON SAME DATE
PUT ON OWN INV. NR. CHECK SUM OF GROUP TO GO THRU MACHINE
PREP UPPER HALF OF CHECK AND INV. REG.
ENTER TOTAL OF "AMOUNT PAID" COLUMN IN A/P ACCOUNT NR. 72
ENTER TOTAL OF "GROSS" COLUMN IN ACCOUNT NR. 13
ENTER TOTAL OF "DISCOUNT" COLUMN IN ACCOUNT NR. 271
OTHERS VERIFY
PURCHASE ORDERS IN GENERAL
VERIFICATION WITH RECORD AND TERMS
RECORD IN STAMP DATE RECEIVED NAME OF TRUCKER FREIGHT BILL NR. DISTRIBUTION OF INVOICE
CHECKS FOR TRANSPORTATION CHARGES ENTERS IN STAMP
ENTER INTO DIST. JOURNAL AND LEDGER ACCOUNTS
SORTED BY JOBS, STOCK OTHER TRANSMITTAL PREPARED
FILED
POST INVOICES CHARGEABLE TO JOBS AND STOCK TO PROPER ACCOUNTS
RCHASING
T ACCOUNTING

FIGURE 3-8

a. Check Register
b. Invoice Register
c. Distribution Journal (for purchased material)
d. Cash Receipts Journal
e. Dividend Journal
f. Payroll Journals
g. Social Security Journal

There is no tie-in at present between the general accounting system and the cost accounting system. Since a tie-in here would result in a stronger cost accounting system, it is recommended that this be accomplished at an early date.

3.5 Cost Accounting System.

3.51 General. The cost accounting system now in use at Sandy Hill is new, having been implemented on 1 January, 1953. It may be said to be still in the "shake-down" phase. The new system is the result of a detailed study of Sandy Hill's past procedures and recommendations by both the Burroughs Corporation and the National Cash Register Company. This study was made by the Comptroller and the Assistant Comptroller for Cost Accounting. The new system utilizes the National Cash Register Accounting Machine model M-38 and new forms for use in these machines developed locally to provide the necessary accumulation of data. This system has resulted in savings of labor, greater accuracy, uniformity of equipment in the accounting department and the ready availability of information for management use such as the report of non-productive labor by departments.

The cost accounting office is supervised by an Assistant Comptroller for Cost Accounting assisted by seven (7) others.

3.52 Labor and Material Costs (Except Foundry). The accumulation of labor and material costs by jobs is briefly described below and presented in more detail in the charts at the end of this section. Individual time slips are prepared by each workman for each job worked on each day. These are generally reviewed only by the Time Clerk to assure that the total time

reported by an employee is the same as that recorded on his payroll clock card. These are processed through the cost accounting office so that all labor costs are charged to customer jobs or standing indirect expense jobs at the actual rate of pay of the individual employees. Overtime, unless specifically requested by a customer, is charged to an indirect expense job and recovered through the burden costs. Direct material is charged to customer jobs directly from the invoices after these have been processed through purchasing and general accounting for the determination of all relevant costs. Stock material is charged by the processing of a material requisition from the stockroom to cost accounting where the cost of issue is determined and posted to the job cost ledger.

There appears to be a fundamental weakness in this system. The basic source of labor costs, the time slip, prepared by the workman himself and not subject to review by his supervisor, is not a reliable source. Without questioning the integrity of the workmen, this system permits too much opportunity for undetected errors or deliberate misstatements. Further, the workmen in general do not understand the far reaching significance of these labor costs and therefore cannot be expected to give proper respect to the task of filling out the time slips. This weakness becomes most significant when it is realized that the recorded costs of jobs become the major bases for the estimates of new work which are submitted as bids in competition with other manufacturers. Under the present method, Sandy Hill cannot be certain that the recorded costs are fair costs of the work. In fact, there are indications that some jobs have deliberately been performed at slower than feasible feeds and speeds when the shop workload has been low. Also, there is evidence that erroneous charges have been made so that a job which was over-estimated would bear some of the costs of a job which was under-estimated. Strong management emphasis on the Weekly Non-Productive Labor Report has also resulted in erroneous charges of non-productive labor to over-estimated jobs. Refer to Section 3.34. The danger in these inaccurate cost records is the position in which they place Sandy Hill at the bidding table. If in a business recession, most recent costs for work similar to that being bid for are inflated, then Sandy Hill will probably bid high for work the Company needs. If deliberate switching of charges has been done, the bids will be too high

on some jobs and too low on others. At any rate, bidding cannot be performed on the basis of true costs. It is also realized that the mere review of the time slips by the supervisors will not correct this weakness. This is necessary but the supervisor must have a basis for judging whether the time reported is reasonable for the job. This involves the establishment of time standards for work items. This is beyond the scope of this chapter, but is discussed in Chapter 5. It is strongly recommended that supervisors be required to review and initial all time slips and that they be given standard time data to serve as a basis of judgment as to whether the labor hours reported are reasonable or not.

An area of duplication of effort has also been determined to exist where the Methods Office receives a copy of the time slips for jobs and posts the hours reported to a record of hours for similar work performed in the past. This serves as a basis for their estimates of proper times for job elements. This function is discussed in more detail in Section 5.4 It is recommended that a means be developed whereby this record can be maintained automatically by the cost accounting office.

3.53 Burden Costs. As described in paragraph 3.322 and paragraph 3.42, a single burden rate is used. At present this rate is $3.10 per direct labor dollar. This includes all indirect expenses, administrative expenses, and selling expenses. This is applied to customer jobs automatically by the accounting machines. As each time slip is processed in the machine, the number of direct labor hours is inserted followed by insertion of the employee's rate. The machine then determines the dollar cost of the direct labor and multiplies this by 4.1 to include the burden. This burden rate is determined by and periodically reviewed by the Comptroller.

The thinking habits which are likely to develop with the use of a single burden rate could restrict Sandy Hill's ability to enter new markets if this should ever be considered. It is quite likely that separate activities of the company such as the foundry, certain shop areas, the erection shop, and engineering have significantly different true burden rates. Bidding for work to be performed by one of these activities by itself should be based on its own true burden rather than a company-wide rate if such bids are to be both competitive and

and profitable. It is recommended that this factor be carefully studied if it becomes desirable for the company to diversify its product line.

3.54 Processing of Data. The following systems for the processing of data have been plotted on the process flow charts following Section 3.57:

a. Recording of Labor Costs for Cost Accounting, Figure 3-9.

b. Receipt and Withdrawal of Material from Stock, Figure 3-10.

c. Recording of Casting Costs, Figure 3-11.

3.55 Foundry Costs. Castings are costed on the basis of their size and material composition. The fact that the labor charges for large castings will generally be less per pound than small castings is accounted for by maintaining a cost differential between several size classes. All foundry labor is reported in two categories, productive and non-productive with no charges being made to specific jobs. The foundry prepares a report, "Castings Issued to Shop" when a casting has been completed. This report indicates how many items were cast, the weight, and the type of material used. Costs are charged to jobs on the basis of this report and a standard pricing schedule prepared by the general accounting office. This schedule lists the price per pound for castings of various size classes and kinds of material. This is prepared periodically by analyzing past experience with the preceding schedule to determine if all foundry costs are being recovered with a reasonable profit through the charges for castings.

The procedure as designed appears to be a good compromise between the desire for accurate costs and the practical difficulties of obtaining accurate labor reports from a foundry. The application of the system appears to be weak however. It is understood that the casting prices now being used do not result in profits from the foundry operations. Further, in some cases cost accounting is di-

RECORDING OF LABOR COSTS FOR COST ACCOUNTING

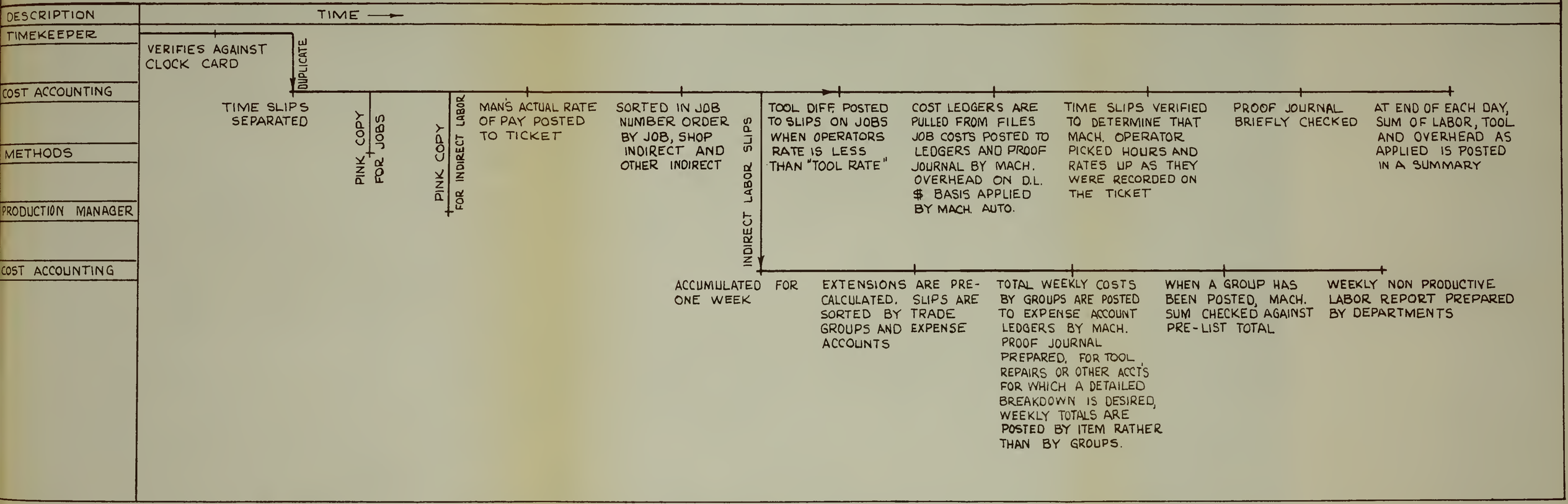

DESCRIPTION
TIME →
TIMEKEEPER
VERIFIES AGAINST CLOCK CARD
DUPLICATE
COST ACCOUNTING
TIME SLIPS SEPARATED
PINK COPY FOR JOBS
PINK COPY FOR INDIRECT LABOR
MAN'S ACTUAL RATE OF PAY POSTED TO TICKET
SORTED IN JOB NUMBER ORDER BY JOB, SHOP INDIRECT AND OTHER INDIRECT
INDIRECT LABOR SLIPS
TOOL DIFF. POSTED TO SLIPS ON JOBS WHEN OPERATORS RATE IS LESS THAN "TOOL RATE"
COST LEDGERS ARE PULLED FROM FILES JOB COSTS POSTED TO LEDGERS AND PROOF JOURNAL BY MACH. OVERHEAD ON D.L. $ BASIS APPLIED BY MACH. AUTO.
TIME SLIPS VERIFIED TO DETERMINE THAT MACH. OPERATOR PICKED HOURS AND RATES UP AS THEY WERE RECORDED ON THE TICKET
PROOF JOURNAL BRIEFLY CHECKED
AT END OF EACH DAY, SUM OF LABOR, TOOL AND OVERHEAD AS APPLIED IS POSTED IN A SUMMARY
METHODS
PRODUCTION MANAGER
ACCUMULATED FOR ONE WEEK
EXTENSIONS ARE PRE-CALCULATED. SORTED BY GROUPS AND ACCOUNTS
SLIPS ARE TRADE EXPENSE
TOTAL WEEKLY COSTS BY GROUPS ARE POSTED TO EXPENSE ACCOUNT LEDGERS BY MACH. PROOF JOURNAL PREPARED. FOR TOOL, REPAIRS OR OTHER ACCTS FOR WHICH A DETAILED BREAKDOWN IS DESIRED, WEEKLY TOTALS ARE POSTED BY ITEM RATHER THAN BY GROUPS.
WHEN A GROUP HAS BEEN POSTED, MACH. SUM CHECKED AGAINST PRE-LIST TOTAL
WEEKLY NON PRODUCTIVE LABOR REPORT PREPARED BY DEPARTMENTS
COST ACCOUNTING

FIGURE 3-9

RECEIPT AND WITHDRAWAL OF MATERIAL FROM STOCK

NOTE: DIRECT MATERIAL CHARGEABLE TO AN EXPENSE ACCT. IS NOT PROCESSED THROUGH COST ACCOUNTING. ENTERED INTO GEN'L EXPENSE ACC'TS BY GEN'L ACCOUNTING OFFICE

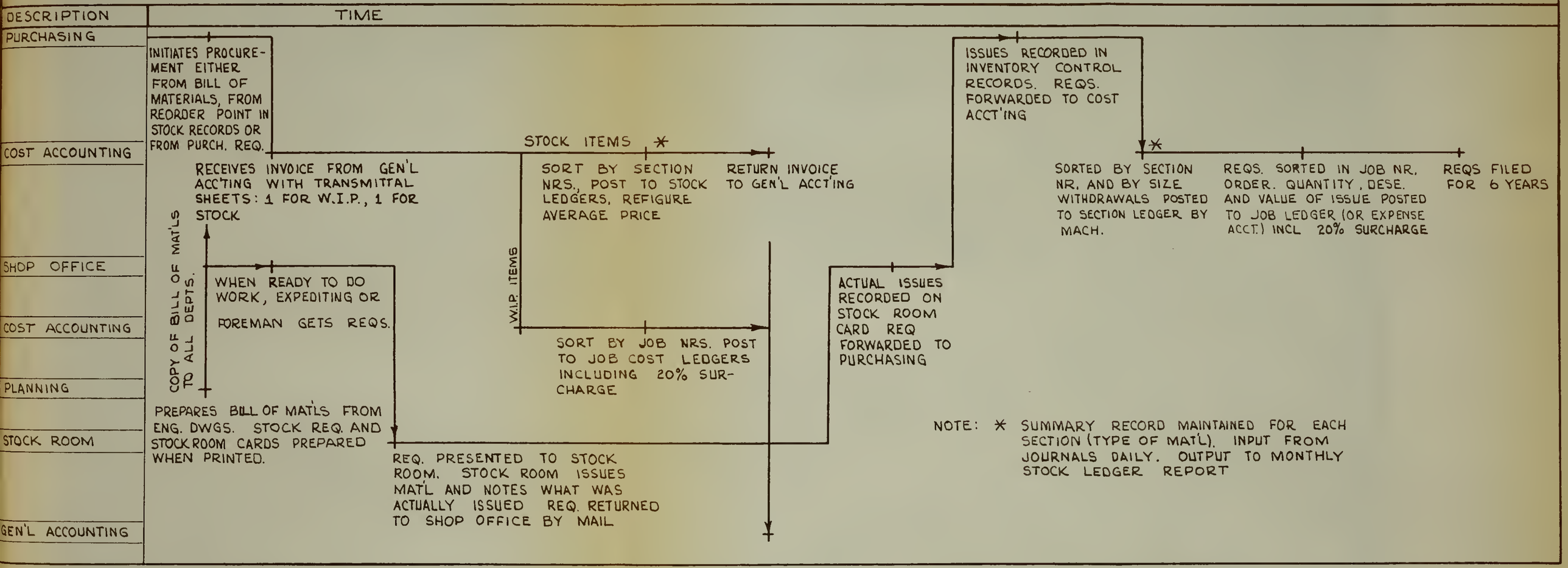

DESCRIPTION
TIME
PURCHASING
COST ACCOUNTING
SHOP OFFICE
COST ACCOUNTING
PLANNING
STOCK ROOM
GEN'L ACCOUNTING
INITIATES PROCUREMENT EITHER FROM BILL OF MATERIALS, FROM REORDER POINT IN STOCK RECORDS OR FROM PURCH. REQ.
STOCK ITEMS *
RECEIVES INVOICE FROM GEN'L ACC'TING WITH TRANSMITTAL SHEETS: 1 FOR W.I.P., 1 FOR STOCK
SORT BY SECTION NRS., POST TO STOCK LEDGERS, REFIGURE AVERAGE PRICE
RETURN INVOICE TO GEN'L ACCT'ING
ISSUES RECORDED IN INVENTORY CONTROL RECORDS. REQS. FORWARDED TO COST ACCT'ING
*
SORTED BY SECTION NR. AND BY SIZE WITHDRAWALS POSTED TO SECTION LEDGER BY MACH.
REQS. SORTED IN JOB NR. ORDER. QUANTITY, DESC. AND VALUE OF ISSUE POSTED TO JOB LEDGER (OR EXPENSE ACCT.) INCL 20% SURCHARGE
REQS FILED FOR 6 YEARS
COPY OF BILL OF MAT'LS TO ALL DEPTS.
WHEN READY TO DO WORK, EXPEDITING OR FOREMAN GETS REQS.
W.I.P. ITEMS
SORT BY JOB NRS. POST TO JOB COST LEDGERS INCLUDING 20% SURCHARGE
ACTUAL ISSUES RECORDED ON STOCK ROOM CARD REQ FORWARDED TO PURCHASING
PREPARES BILL OF MAT'LS FROM ENG. DWGS. STOCK REQ. AND STOCK ROOM CARDS PREPARED WHEN PRINTED.
REQ. PRESENTED TO STOCK ROOM. STOCK ROOM ISSUES MAT'L AND NOTES WHAT WAS ACTUALLY ISSUED REQ. RETURNED TO SHOP OFFICE BY MAIL
NOTE: * SUMMARY RECORD MAINTAINED FOR EACH SECTION (TYPE OF MAT'L). INPUT FROM JOURNALS DAILY. OUTPUT TO MONTHLY STOCK LEDGER REPORT

FIGURE 3-10

PROCESS: RECORDING OF CASTING COSTS

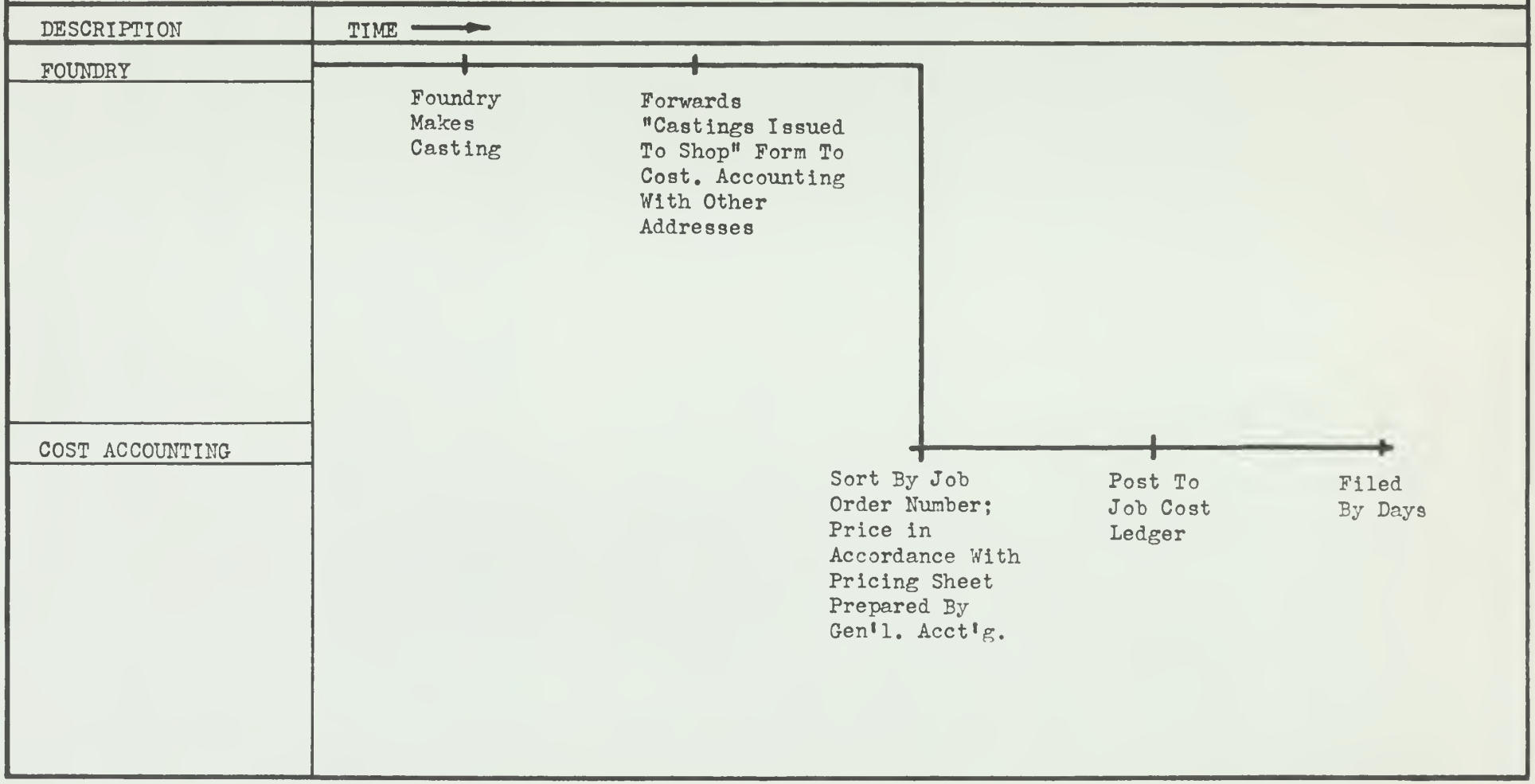

DESCRIPTION
TIME
FOUNDRY
COST ACCOUNTING
Foundry Makes Casting
Forwards "Castings Issued To Shop" Form To Cost. Accounting With Other Addresses
Sort By Job Order Number; Price in Accordance With Pricing Sheet Prepared By Gen'l. Acct'g.
Post To Job Cost Ledger
Filed By Days

FIGURE 3-11

rected to charge a job for the bid estimate of the casting cost rather than the schedule price. This is apparently done to keep job costs, as recorded, close to estimates. No justification can be seen for this as it results in inaccurate job costs with the related dangers discussed in Section 3.52. It is recommended that the system as designed be fully implemented so that the casting costs will result in profitable operations for the foundry with the most accurate estimates of true cost being charged to the jobs.

3.56 Stock Control. The new cost accounting system includes a feature whereby the stock ledger cards include in addition to dollar value, material quantity data in sufficient detail to eliminate the stock control file system now maintained in the purchasing office. The accounting machines will maintain these records automatically and will lock when a reorder point is reached on any item. This will signal the cost accounting supervisor to prepare a re-order memo and forward it to purchasing. It is understood that a decision has been made to eliminate the duplicate file in purchasing. While there will be problems in setting up ledgers by specific sizes and shapes where dollar value is now sufficient and in keeping the records up to date at all times, it is agreed that the cost accounting office should absorb this function at an early date.

3.57 Tie in to General Accounting. At the present time the cost accounting system is independent of the general accounting system except for the comparison of payroll clock cards with time slips to assure that the total hours reported in each is the same. It is felt that a proof of the costs charged to jobs with the payroll and material charges accumulated by the general accounting system would strengthen the cost accounting system and assist in obtaining more accurate job costs. It is recommended that this be accomplished at an early date.

3.6 Inventory Custody.

3.61 General. Until the immediate past, inventory control

responsibilities have been divided between the Purchasing Department and the Comptroller. The disadvantages of this have been under study for some time and with the advice and concurrence of the company's auditors, it has been decided to assign the inventory custody functions to the Comptroller, Purchasing retaining the responsibilities for determining maximum and minimum stock levels and reorder points.

3.62 Responsibilities of the Comptroller. The Comptroller is now responsible for maintaining all inventory records including dollar value and quantity records of stock materials which are maintained in Cost Accounting and records of in-process and direct materials in the storerooms. These latter records are maintained by the Inventory Control Section. The Comptroller is also responsible for the custody of all stock direct and in-process materials and for operating the storerooms.

3.63 Organization. The Inventory Control Section is supervised by the Supervisor of Inventory Control who is assisted by six (6) others including a newly appointed Inventory Auditor who will conduct a continuing review of inventory, records and physical. It is considered that the heart of inventory control is the determination of minimum stock levels, reorder points and reorder quantities. Since effective manufacturing is so dependent on this function, it has been recommended in Chapter 1 that this responsibility be assigned to the Manufacturing Department. To clarify this assignment, it is recommended that the Inventory Control Section be renamed, Inventory Custody Section.

3.7 Control Functions.

3.71 Financial Planning. In addition to the administration of the accounting system and the analysis of its reports, the Comptroller has responsibility for certain control functions which are related to accounting. His primary responsibility of this nature is financial planning. In December of each year a projection is made of the coming year's sales based on estimates by the sales organization and the judgment

of the company management. An expected employment level is determined from this and an expected annual operating statement is prepared based on this employment level (and the present level if they vary significantly). This shows the anticipated expenditures for all expense categories. This statement indicates the expected profit or loss for the coming year. Using this as a reference point, without changing these figures, the Comptroller continually analyzes monthly sales and expenses and advises management so that decisions can be made to direct the company's efforts to profitable operations. This is done by preparing monthly comparisons of actual versus projected conditions.

3.72 Cash Position Analysis. Also of major importance is the continuing analysis of the cash position of the company maintained by the Comptroller. At all times a prediction is maintained of cash income and outlays for the next three months, longer when valid information is available.

3.73 Internal Audit. The monthly estimate of profit and loss has been discussed under the report which results from this function in Section 3.331. This report is based on an audit of the costs to date of all jobs of significant size (no specific lower limit is established) on a weekly basis and a comparison of these costs with the original estimates and the estimates of physical completion provided by the shops. A linear relationship between cost and progress is assumed. In addition to providing data for the monthly reports, this internal audit function prepares a weekly list of critical jobs, i.e., those jobs which apparently will exceed the original estimate of total cost, engineering as well as shop. This list is prepared so that the shop will know which jobs deserve special attention in an attempt to reduce costs. There is evidence that this report results more in switching charges from one job to another as discussed in Section 3.52, than it does in real effort to reduce costs. It is recommended that this list of critical jobs not be sent to the shop but that management discuss with shop supervision those jobs which are greatly exceeding the estimate. It is felt that these discussions, if limited to a few critical jobs, will result in serious efforts to reduce costs. Further it would assure that the shop did not feel that it was the scape-

goat for poor estimates or higher than estimated engineering work.

3.74 Credit. The Comptroller exercises control over credit and accounts receivable on a case basis. Since most of the company's customers are well established and have done business with Sandy Hill before, this has not been a significant problem.

3.8 Office Administration.

3.81 General. Office administration at Sandy Hill encompasses the activities of procuring and distributing office supplies, arranging and furnishing the various office spaces, maintaining office machines, distributing incoming orders, and other incoming and outgoing correspondence, maintaining an inter-office mail and messenger service, maintaining the plant communication system, controlling office files, and operating a ditto duplicating system. Administration in many of these areas is informal as might be expected from a knowledge of Sandy Hill's growth and general policies. This informality, almost looseness, which might be viewed askance in a larger or more formal organization, might well be most satisfactory in the small, loose-knit, family-type organization which is Sandy Hill.

Office administration functions are under the direction of the Office Manager. The Office Manager also wears the 'hats' of Order (or Planning) Department Head and of Assistant Secretary and Treasurer.

3.82 Office Supplies. A stockroom for commonly used office supplies is maintained as an adjunct of the Purchasing Department. All office personnel are authorized to draw such supplies as needed, and no chits are used or records kept. Replenishment is made when the clerk notices that the supply of particular items is low. Other office supplies, particularly mimeograph paper and various special forms, are stocked in the departments which use them. In this case, the department personnel directly involved are authorized to place purchase

requisitions directly with the Purchasing Department.

3.83 Office Spaces and Furniture. Office spaces have grown like "Topsy" in various areas in the main building at Sandy Hill. Though these spaces undoubtedly serve their purposes, there is considerable doubt that they make for efficient operations. The Accounting Department is split into three areas with considerable distance between the cost section and the other accounting sections. The Sales Department is split, with offices in several locations.

Short of extensive alterations, or the construction of a new office building, it is not likely that the spaces could be made much more attractive or functional. However, rearrangement of the present spaces could probably result in a grouping of activities which would facilitate Company operations. The Company has not attempted a study of space allocation and a chart of such spaces is not available. Such a study is recommended for future consideration. The greater part of the office furniture is a mixture of equipment accumulated through the years and no attempt has been made to periodically replace old furniture with more modern. Nevertheless the equipment is considered adequate for the needs of the plant though it might not be conducive to worker morale. Maintenance of spaces and furniture is performed by the plant maintenance department on an as-needed basis at the request of the Office Manager, or on a time-available basis at the suggestion of the maintenance manager. Office equipment inventory records are kept in the general accounting office.

3.84 Office Machines. Office machines are procured (through the Purchasing Department), inventoried, and maintained (primarily on a contract basis) by the Office Manager. Modern equipment is evident in most office areas.

3.85 Routing of Mail. All incoming mail is picked up from the post office by the messenger who takes it to the plant and opens it. It is separated and initially reviewed by the Office Manager or his assistant and is then distributed to the appropriate offices in the plant. Outgoing mail is prepared and signed in the various departments and is then for-

warded, via the messenger service, to the mail room for sealing, stamping, and mailing. There is no organized effort to provide copies of incoming mail to definite routing lists, nor is outgoing mail routed through definite channels prior to or subsequent to signing. Reliance is placed upon the persons receiving or preparing mail to notify and/or to send copies to other persons whom they believe might be interested.

3.86 Messenger Service. There is an internal inter-office messenger service which consists of four daily trips through the plant by the messenger who will pick up mail and other matter and distribute each piece in accordance with routine or specific instructions.

3.87 Communications System. Aside from the messenger service this consists of the telephone-intercom system and an in-plant call system.

The telephone system has been recently modernized by installation of a system which will enable any telephone in the plant to be used for dialing any other phone in the plant. Local calls in the Hudson Falls area may also be dialed. Long distance calls may be placed through the operator. The new system will be operated by one full-time (8-hour) operator who will obtain relief from a part-time operator. It is expected to improve in-plant communications considerably and, by relieving the operator of this activity, to improve long-distance service also.

The in-plant call system utilizes a buzzer, heard throughout the plant, which is used to call key personnel to a telephone by buzzing an assigned number. This system is operated by the switchboard operator.

3.88 Office Files. There are no central files. Each department files the documents or copies of documents which are considered of importance for retention.

3.89 Central Duplication System. There is no central duplicating system. Each office procures the equipment and

supplies needed to duplicate its own material as necessary. There is, however, a duplicating operation maintained by the Office Manager which is available to those activities which do not have sufficient requirements to establish their own setup.

3.9 The Purchasing Department.

3.91 General. The Purchasing Department orders direct material as authorized for procurement by a Bill of Materials and maintains the required levels of stock material. The Purchasing Department is supervised by the Purchasing Manager.

3.92 Direct Material. The Purchasing Department receives a Bill of Materials from either the Engineering (for the advance procurement of long leadtime or critical items only) or from the Order Department. This is the authority to purchase the material listed. At least three quotations are obtained for all but proprietary items on the basis of price and delivery time. Each of these factors must be evaluated in determining to whom to award a purchase order. In some instances a higher price at shorter delivery time may be justified by shop conditions. Overall economy here requires a fine degree of coordination between the Purchasing Department and the shop. When a quotation is accepted, the Purchasing Manager signs the purchase order. All outgoing purchase orders are also approved by the President or an officer of the Company. If the purchase order has not been acknowledged within seven days, a follow-up is initiated. Periodically a shortage list is prepared listing those materials needed but not available for scheduled work. This is prepared at a weekly production scheduling conference. Further follow-up is initiated as a result of this listing.

3.93 Stock Material. As discussed in Sections 3.56 and 3.6, the Purchasing Department at present maintains a Kardex record of the quantities of stock materials in stock. This file also shows the maximum and minimum stock levels and the reorder points. Procurement is initiated when the level reaches the reorder point. For this material it is not mandatory to solicit the three quotations since experience may indicate the

most economical source of supply. Also when a price increase is expected, maximum quantities can be exceeded. As part of this function purchasing indicates on each Bill of Material the availability of stock materials before the B/M is reproduced and distributed.

As discussed in Sections 3.56 and 3.6, a decision has been made to eliminate this Kardex file since it duplicates records which are automatically maintained in cost accounting. However, on the basis of this decision purchasing will still determine maximum and minimum quantities and reorder points. Chapter 1 of this report, however, recommends that this function be reassigned to the Manufacturing Department. Section 3.63 of this chapter also refers to the foregoing. Chapter 1 of this report also recommends that the Purchasing Department be incorporated as a part of the Manufacturing Department.

3.10 Summary of Recommendations. We recommend:

1. That management avoid undue emphasis on the weekly non-productive labor report. Refer to paragraph 3.34.

2. That the labor and material costs recorded by the cost accounting system be proved against the corresponding records of the general accounting system. Refer to paragraph 3.47 and 3.57.

3. We strongly recommend that supervisors be required to review and initial all time slips to assure that correct and reasonable times are charged for work performed. Refer to Section 3.52.

4. That standard time data be developed to the maximum extent possible to give supervisors a basis for judging whether reported labor times are reasonable or not. Refer to Section 3.52 and recommendation 3.

5. That a means be developed whereby the record of labor hours required by the Methods office can be maintained automatically by cost accounting. Refer to Section 3.52 and Section 5.4.

6. That the variation of the true burden rate for the several activities of the company from the company-wide rate rate now used be recognized if the company decides to enter into product fields which would permit manufacture or service by any activity alone. Refer to Section 3.52.

7. That the system for determining casting costs be implemented as intended so that profitable foundry operations will result and accurate estimates of costs will be charged to the jobs. Refer to Section 3.55.

8. That the weekly list of critical jobs not be sent to the shop but that management discuss the jobs which will result in significant losses with shop supervision. Refer to Section 3.73.

9. That a study be conducted of the present arrangement of office spaces. Refer to Section 3.84.

10. That the Inventory Control Section be renamed, "Inventory Custody Section". Refer to Section 3.63.

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